Organizational Antecedents of Population-Level Organizational Diversity

Exploring the Micro-Foundations of Resource Partitioning Theory
A Simulation Approach

A dissertation presented by
Giuseppe Pagani

Supervised by
Prof. Alessandro Lomi
Prof. Erik Reimer Larsen

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Abstract

"Why are there so many kinds of organizations?" (Hannan and Freeman, 1977: 936). As Astley (1985) suggests, "[t]his question focuses inquiry on organizational diversity, the differentiation of organizations into varying population types" (p. 224). Out of the different literature streams, which have addressed the topic of organizational diversity, an effective explanation of the dynamics related to this organizational phenomenon has been provided by Resource Partitioning theory (Carroll, 1985), which has attempted to explain the coexistence of patterns of concentration and specialization within the same industrial setting.

Despite the extensive empirical evidence supporting Resource Partitioning theory (see Carroll, Dobrev and Swaminathan, 2002 for a review), an effective and thorough explanation and specification of the causal mechanisms underlying the operation of this industrial segregating process has not yet been effectively advanced. (Carroll and Hannan, 2000; Carroll, et al., 2002). Resource partitioning theory focuses on the conditions - mostly working at an industrial level - under which one would expect differences in performance between generalist and specialist organizations to arise - and processes of concentration and specialization to coexist (Kim, Dobrev, and Hannan, 2001). However, this theory leaves apart many important questions about the emergence, the evolution and the persistence of instances of organizational diversity in given industries. In general, the theory does not specify what a generalist and a specialist organization are.

In particular, the theory does not suggest:

- How do organizations become specialist or generalist?

- Why would/could a specialist not become a generalist or vice versa?

- Why should generalists grow large in size, while specialists remain small?

To answer these questions, this dissertation aims at complementing industry-level explanations of organizational diversity put forward by resource partitioning theory with an analysis of the internal processes featuring generalist and specialist firms' practices, within the industrial setting of Professional Service Firms (PSFs). This particular context was chosen because PSFs confront a choice between different - and sometimes opposite - paths to profitability. PSFs operating in the field of legal, accounting, consulting services frequently operate in a competitive environment in which "[t]he large, multinational accounting firms coexist with very small, local auditing firms, and both may be highly profitable simultaneously" (Løwendahl, 2005: 127).

To attain this task, I rely upon the development of a dynamic simulation model. This choice was made because the empirical evidence about the internal organizational processes that foster PSFs' profitability is limited to the study of large and successful organizations. In order to catch the operations of these mechanisms in specialized firms, one can only refer to fragmented theoretical propositions. Simulation modeling allows, on the one side, to subject the theoretical propositions concerning the operations of specialist PSFs to the test of logical consistency. On the other hand, through simulation it is possible to compare the results the model produces about generalist

behavior with empirical observations. Finally, it will be possible to assess whether the results, which the model produces, are consistent with the industrial patterns outlined in resource partitioning theory.

Key words: Resource Partitioning theory, Professional Service Firms, System Dynamics

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Introduction

"Why are there so many kinds of organizations?" (Hannan and Freeman, 1977: 936). This question, which is at the roots of the ecological approach to the study of organizations (Hannan and Freeman, 1977, 1989), has been of interest to a wide range of scholars in sociological, organizational and managerial theories. As Astley (1985) maintains, "[t]his question focuses inquiry on organizational diversity, the differentiation of organizations into varying population types" (p. 224). Organizational diversity has become a significant focus of investigation because of the profound influence it exerts on many important processes and dynamics at varying levels of aggregation, e.g. from career opportunities (Hannan, 1988) to population level learning (Jackobs, 1969).

According to Fombrum (1988), prior studies of the dynamics of organizational diversity can be divided into two strands. The first stream of literature, rooted in institutional theory (DiMaggio and Powell, 1983), focuses on those processes leading to organizational convergence, identified as isomorphism. As DiMaggio and Powell (1983) claim, isomorphism "forces one unit in a population to resemble other units that face the same set of environmental conditions". (DiMaggio and Powell, 1983: 149). The second stream stresses those processes fostering organizational divergence, with a particular focus on the ecological model of localized competition, which implies the emergence of disruptive or segregating selection processes (Amburgey, Dacin, 1994; Baum and Haveman, 1997), which create the emergence of differentiation among organizations competing for finite resources. This model of selection tends to increase organizational diversity by producing gaps in the distribution of the members of a population along some organizational dimensions (Baum, 2002).

To my knowledge and understanding, only one theory has effectively blended these two approaches to the study of organizational diversity, i.e. resource partitioning theory (Carroll, 1985). This theory moves from the observation of an intriguing pattern of market structure and organizational diversity: a number of small, specialist organizations manage to profitably coexist

alongside a handful of large generalists, controlling a substantial share of competitive resources. This industrial structure appears to be particularly surprising, since market concentration has often been regarded as an important barrier for potential new entrants (e.g. Porter, 1980). Resource partitioning theory explains this occurrence by maintaining that under given market conditions, mainly related to the exploitation of scale economies, small generalist organizations are out-competed by larger ones. Small generalists' failure releases resources, which are for the most part acquired by adjacent, large, surviving generalists, thus making them even larger and allowing them to control for increasing shares of the overall resource availability. These large generalist organizations, however, are unlikely to control all of the resources available in a given industry, since the cost of acquiring some marginal ones might not be worth the benefit of their deployment (Carroll and Hannan, 2000). It is by occupying such "left-over" resource space that specialist organizations can enter a concentrated market. Resource partitioning theory represents the most complete theoretical framework on the dynamics of organizational diversity, since it takes into account both forces of organizational convergence (among generalists) and divergence, i.e. specialist proliferation (Boone, Wezel and Witteloostujin, 2006).

Despite the extensive empirical evidence supporting this theory (see Carroll, Dobrev and Swaminathan, 2002 for a review), an effective and thorough explanation and specification of the causal mechanisms underlying the operation of this industrial segregating process has not yet been effectively advanced. (Carroll and Hannan, 2000; Carroll, et al., 2002). Resource partitioning theory focuses on the conditions – mostly working at a population level – under which one would expect differences in performance between generalist and specialist organizations to arise – and processes of concentration and specialization to coexist (Kim, Dobrev, and Hannan, 2001). This theory leaves apart many important questions about the emergence, the evolution and the persistence of instances of organizational diversity in given organization populations. In particular, the explanation

resource partitioning theory advances about the emergence of organizational diversity in given population fails to provide an effective answer to three important questions.

1. How do organizations become specialist or generalist?; As Ruef (2000) claims, "ecological models of resource partitioning among individual organizations have primarily been employed to explain differential entry rates of generalist and specialist organizations within extant forms […]. While these models can be extended to multiple organizational populations […], they have not been adapted to illuminate the development of new forms themselves". (p. 659).

2. Why would/could a specialist not become a generalist or vice versa?; Carroll (1985) labels the process whereby specialist organizations can proliferate in concentrated markets as 'resource partitioning' precisely because this process leads a population to be partitioned into two different markets, one for generalists and one for specialists. For a market to become partitioned, however, some conditions need to be fulfilled, among which "organizations are not fully pliable and cannot change strategies instantaneously or even regularly, […] chosen organizational strategies constrain the options and activities available to an organization" (Carroll, 1985: 1272). These conditions, however, are offered as theoretical assumptions, which the theory builds upon and therefore they are not straightforwardly investigated.

3. Why should generalists grow large in size, while specialists remain small?; beside core issue of relating processes of market concentration and specialization, resource partitioning theory reveals another important industrial pattern featuring partitioned industries. It shows that generalist organizations are likely to grow large in size, while specialists tend to remain small (Carroll, 1985; Carroll and Hannan, 2000). However, as Boone, *et al.* (2000) maintain, "there is not necessarily a one-to-one relationship between the concepts [of generalism and size]" (p. 363). What factors would therefore account for this strictly bimodal size distribution in partitioned industries? As Jaffee (2001) maintains "[t]his question implicates important issues of both industry evolution, such as the

evolution of size distributions and thus levels of market concentration, and firm strategy, including the important role of firm size for survival and performance" (p. 113).

In order to answer these questions, this dissertation aims at complementing population-level explanations of organizational diversity put forward by resource partitioning theory with an analysis of the internal processes featuring generalist and specialist firms' practices. In general, as suggested by Amit and Shoemaker (1993), one cannot fully understand the emergence of organizational diversity in given industries without recognizing the role entrepreneurial decisions play in shaping the evolution of different organizational forms in an industrial context. The analysis of the internal processes and resource endowments of firms is a valuable complement to industry-level investigations if one aims to highlight and explain the heterogeneity of firms, their varying degrees of specialization, and the limited transferability of corporate resources. The importance of entrepreneurial decisions is stressed by Carroll himself in a 1984 article, which precedes the formulation of his theory. As he claims, "[i]f […] both generalism and specialism are viable strategies, how should an entrepreneur choose between them?" (Carroll, 1984: 132). In his opinion, in case of no resource constrains directing such decision, the choice between the two alternative strategies is to be made with reference to the level of concentration in the market, which the entrepreneur wishes to enter. Nevertheless, once such strategic decision has been made, the entrepreneur also needs to arrange the internal structures and processes of her/his organization in a way that would allow the best implementation of the chosen strategy (Chandler, 1962). This issue is however not directly tackled by resource partitioning theory in its original formulation. The aim of this work is investigating the effects of an entrepreneur's choice between generalism or specialism has on the internal organization of her/his organization, defined in terms of structures and processes. On the basis of such analysis, a tentative explanation of the implications, which entrepreneurial decisions have on the industrial dynamics observed with the lenses of resource partitioning theory will be provided.

Substantive reflections

Against the backdrop of these general considerations, which have outlined the theoretical positioning of this dissertation, highlighting its main research questions and aim, in this dissertation I present a first attempt to build a dynamic model for the development of organizational capabilities in Professional Service Firms (PSFs). This particular context was chosen because PSFs confront a choice between different – and sometimes opposite – paths to profitability. PSFs in the field of legal, accounting, and consulting services frequently operate in a competitive environment in which "[t]he large, multinational accounting firms coexist with very small, local auditing firms, and both may be highly profitable simultaneously" (Løwendahl, 2005: 127). How could this be possible? Boone, *et al.*'s (2000) application of resource partitioning theory in the auditing firms industry, and Jaffee's (2001) resource partitioning study of corporate law firms, shed some lights on this issue, by showing that the generalist and the specialist PSFs not only target different market segments and do not enter into direct competition against each other, but they also exploit two different sources of competitive advantage: scale economies, in the case of generalists PSFs, and service personalization, for specialists.

As Maister (1993) maintains, the orientation a PSF takes up (in this case generalism vs. specialism) "is a significant force in influencing the economics of the firm, its organizational structure, and its positioning in the client and people markets." (p. 18). These issues are, however, only partially considered within the theoretical framework of resource partitioning, which base its results and suggestions almost exclusively on population level analysis. Therefore, in this dissertation I will analyze to what extent the different strategic posture a PSF takes influences the arrangement of its internal structures and processes, allowing for the effective exploitation of the different sources of competitive advantage. On the basis of this analysis, I will then assess the extent to which the different internal organizational configuration of the generalist and specialist PSFs contribute to explain the emergence of organizational diversity in professional service industries.

As a corollary to this main research aim, this dissertation also intends to pursue another important objective. The extensive research conducted about the strategic management and internal organization of PSFs suffers of at least one notable bias. Despite the acknowledgement that professional service industries feature organizational diversity, researchers have focused their analyses only on large, successful firms, thus providing little guidance to understand what a specialized firm is and how it can define its internal structures and processes to foster its profitability (Løwendahl, 2005; Malhotra, *et al*., 2006). From an internal organization viewpoint, the emergence of organizational diversity in professional service industries has not been thoroughly explained, since an effective definition of a specialist PSF's internal mechanism allowing it to profitably survive alongside large and powerful generalist organizations has not been advanced. Therefore, this dissertation also aims at identifying which mechanisms allow specialist PSFs to foster their profitability.

Methodology

From a methodological viewpoint, this dissertation will rely upon the development of a dynamic simulation model in order to attain the research aims previously stated. Simulations can be used both to develop theory and as a form of empirical data analysis (Hanneman, *et al.*, 1995). In the first case, the modeler is interested in discovering the dynamics implied in theoretical propositions about the relationship among constructs. In the second, the main objective is to explain which structures give rise to empirically observed behaviors (Hanneman, *et al.*, 1995; Davis, *et al.*, 2005: Harrison and Carroll, 2006). The rationale that makes simulation the most suitable tool to employ in this research is the following. This dissertation's main objective is understanding why organizational diversity emerges, by complementing population level suggestions provided by resource partitioning theory about the industrial dynamics fostering the emergence of such diversity, with an analysis of the internal processes featuring the operations of the generalist and specialist organizational forms in the professional services industrial context. Empirical investigations about the internal organization

of PSFs is at this time still unbalanced, since it has almost solely focused on the study of large and successful organizations. In order to catch the operations of internal mechanisms in specialized firms, one can instead only refer to fragmented theoretical propositions. The empirical data that are available are therefore unlikely to allow conducting direct and reliable comparisons between the generalist and the specialist practices in professional service industries. Nevertheless, a number of important theoretical contributions have provided accurate and extensive suggestions about both the generalist and the specialist internal operation and organization. Theoretical constructs do provide information, thanks to which one can build reliable simulation models (Forrester and Senge, 1980; Barlas, 1996). The use of simulation is therefore attractive because it allows translating theoretical propositions into a simulation model, the results of which can be reliably compared. Moreover, since by building simulation model on the basis of theoretical constraints one subjects them to a test of logical consistency (Hanneman, *et al.*, 1995; Davis, *et al.*, 2005: Harrison and Carroll, 2006), the results can provide reasonable guidance for further empirical testing.

Structure of the dissertation

Chapter 1 – Theoretical Background

Chapter 1 will provide the theoretical foundations of the dissertation. The intent is to define what a PSF is and reviewing the main theoretical contribution to the study of this type of firms. After showing the weight of the service sector in the world economy, with a special concern offered to the role played by professional services, it will first draw upon prior theoretical works to provide a definition of PSF and then highlight the most important organizational elements of these firms. The chapter will close by highlighting that "[p]rofessional services are not the same" (Løwendahl, 2005: 119). They can differ by the type of clients, which they decide to serve, and on the type of resource, which they base their value creation process upon (Maister, 1993; Boone, *et al.*, 2000; Jaffee, 2001; Løwendahl, 2005). On the basis of the strategic positioning a PSF has towards the marketplace, its

internal organizational configuration changes dramatically, in order to effectively support the operation of its activities (Maister, 1993). These differences will be advanced with reference to the generalist and specialist organizational forms, as suggested by resource partitioning theory, which represent the two extremes along the whole spectrum of possible strategic postures, which a PSF can have.

Chapter 2 – Methodological Approach

Chapter 2 provides an overview of the methodological approach employed in this research, i.e. computer simulation. After having established simulation within the scientific enquiry landscape, the main characteristics of this methodological approach will be presented, along with a full list of different types of simulation methods, with a special emphasis on the System Dynamics (SD) approach, i.e. the one that will be employed. Finally, a rationale for using simulation, and in particular the SD approach will be advanced.

Chapter 3 – The Model

This chapter describes the development of the simulation model that was build to conduct this research. The model contains four major sectors, representing the main constituent parts of the internal organizational arrangement of PSFs, i.e. business orientation, HR, knowledge and economics. The chapter provides a full listing and theoretical justification of the chosen functional forms forming the model and the relationships among them, along with details of their initial numerical values.

Chapter 4 – Model Behavior and Validation

Chapter 4 shows the baseline results of the simulation model presented in Chapter 3. The aim of this chapter is twofold. On the one hand, it intends to assess the validity of the model, i.e. the reliability of the results, which it produces. On the other, it aims at understanding what forces or circumstances within the boundaries of an organization define its evolution towards the generalist or the specialist

forms. In this regard, this chapter will propose that the initial investment decision is the very core element responsible for the emergence and evolution of either the generalist and the specialist organizational form.

Chapter 5 - Path Dependencies and Positive Feedbacks: Exploring the Barriers to Organizational Change in Professional Service Partitioned Industries

Chapter 5 addresses one important issue concerning the dynamics found in partitioned markets, i.e. the unlikelihood of organizations to alter their forms (Carroll, 1985). In fact, resource partitioning theory builds upon "the assumption that organizations are not fully pliable and cannot change strategies instantaneously or even regularly, [*and*] the assumption that chosen organizational strategies constrain the options and activities available to an organization" (Carroll, 1985: 1272). The simulation model is here employed to investigate these assumptions and understand what factors make organizations' aim to fruitfully undergo strategic and organizational change hard to attain. This chapter will propose that the initial investment decision, which is responsible for the evolution of an organization in either the generalist or the specialist form, also acts as a stringent constraint to organizational and strategic change.

Chapter 6 – Growth Patterns of Generalist and Specialist Professional Service Firms

Any investigation conducted within the resource partitioning theoretical framework has always assessed a strict bimodal size distribution featuring partitioned markets, with generalists usually being large in size, while specialists tending to remain small. This recurrent empirical observation, still lacks a proper theoretical explanation (Jaffee, 2001). This chapter aims at revealing this explanation within the boundaries of the generalist and the specialist organizations, by assessing to what extent their different structures and processes might act as regulators of their growth patterns.

Conclusions

On the basis of the specific outcomes of the preceding chapters, a general overview of the results attained in this research will be finally presented, together with a specification of its mail limits and suggestions for further research.

Chapter 1
Theoretical Background

1.1 Introduction

The aim of this chapter is reviewing the main theoretical contributions about the internal organization of PSFs and hence establishing the theoretical foundations of this dissertation. The fundamental issues, which this chapter deals with, is defining what a Professional Service Firm (PSF) is, what are its constituent features and how these characteristics differ according to the generalist and specialist practices (Boone, *et al.*, 2000; Jaffee, 2001).

This chapter will be organized as follows. The first section will outline the role, which the service sector plays in the economic landscape, with a specific concern devoted to professional activities. As it will be shown, services do play a central part in the world economy, both as a sector *per se* and as a support to traditional, manufacturing industries. The rising importance of services largely accounts for the great attention managerial and sociological theories have devoted to (professional) service firms. Nevertheless, such interest also stems from the evidence that these firms rely upon internal mechanisms and processes that profoundly differ from those featuring traditional, manufacturing firms. As a consequence, traditional strategic and organizational theories can only limitedly be applied to understand how these firms operate and foster their competitive success (Løwendahl, 2005). A novel stream of literature therefore arose to provide suggestions and insights specifically tailored to these organizations. Drawing upon these theoretical contributions, the following section will provide a definition of what a PSF is and what its constituent characteristics are. Next, a description of the main structural characteristics and operating mechanisms of these firms will be provided. This section will also outline that PSFs are not all the same. The last section of this chapter will show how the generalist and specialist PSFs differ in terms of structures and processes and in which way these contribute to foster the profitability of these two alternative organizational forms in the professional service industrial context.

1.2. The Service Sector

It is now widely acknowledged that the service sector plays a central role in the economic activity in terms of GDP, employment and international trade. According to the OECD (2000), total services' value added to GDP in 2000 was around 65% and 64% of all workers were employed in activities related to services. Although the share of services in international trade was still relatively low (around 19%), this level has been rising, with an average annual growth rate of 6.4%, which is slightly higher than the growth rate of manufacturing goods, at 5.9%. Out of this general share, which account for the service sector considered as a whole, i.e. ranging from wholesale retail trade to government services, a major role is played by professional, scientific and technical services, which the OECD (2000) regards as "provision of specialized, generally "knowledge-based", expertise (e.g. legal, accountancy and engineering) (p. 39. Emphasis in original). They represent the most rapidly growing sectors and account for over the 40% of OECD countries' GDP, and 45% of these countries' workforce is employed in professional and managerial occupations (OECD, 2000).

Services play a crucial role in the economic landscape not only as an industry *per se*, but in support to traditional, manufacturing sectors, too. Still according to the OECD (2000), services and manufacturing live in close, supportive and symbiotic relationship. In many cases, the final value of products does result from its "intangible" features, related to the knowledge and expertise applied to conceive and finalize them, as well as to other service-related activities, like technical assistance. The relevance of the service sector in support to manufacturing firms appears to be principally linked to professional related activities. As Maister (1993) claims that, in most cases, traditional firms "may have the ability and resources to perform the work itself, but turns out to the professional firm because the firm can perform the service more efficiently, because the firm is an outsider, or because the client's own staff capabilities to perform the activity are somewhat constrained and are better used elsewhere" (p. 5). Løwendahl (2005) echoes this suggestion, by claiming that "the increasing level of specialization and expertise required within a large number of areas such as legal

contracts, tax regulations, accounting practices, […], suggest that only very large firms will have the capacity to develop and utilize all the necessary expertise in-house" (pp. 19-20).

The rising importance of the service sector in the economic scenery, and in particular of professional service practices, led managerial, organizational and sociological researchers to devote a great deal of attention to service firms, with a special concern to professional ones. Nevertheless, much of this interest arises because these firms rely upon internal mechanisms and processes that profoundly differ from those featuring traditional, manufacturing firms, thus making the application of traditional strategic and organizational theories very limited (Løwendahl, 2005). As the author exemplifies, "[o]ne of the most popular and widely applied models, the value chain (Porter, 1985), is difficult, if not impossible, to adapt to a firm where no linear production […] exists." (Løwendahl, 2005: 33). Strategic management, organizational and sociological investigations into (professional) service firms therefore gave rise to a specific stream of literature, providing suggestions and insights specifically tailored to these organizations. The following section will draw upon these theories in order to provide a definition of what a professional service firm is and what their constituent features are.

1.3 What is a Professional Service Firm?

"The notion of a "professional service", as opposed to just any service, may be interpreted in two ways: services delivered by "professionals", or services delivered according to "professional norms or rules of conduct" (Løwendahl, 2005: 20. Emphasis in original). The employment of practitioners can be assumed as being the core distinction between a *professional* and any other service firm. Nevertheless, in order to effectively identify PSFs, it is essential to understand the profound influences this occurrence has on these firms' internal structures and mechanisms. The first step towards the identification of these firms therefore concerns the definition of what professions, and hence professionals, are.

One of the most helpful contributions to the identification of what professions are and what their role in our society is, is provided in Abbott's (1998) *'System of Professions'*. According to the author, "professions are exclusive occupational groups applying somewhat abstract knowledge to particular cases" (Abbott, 1988: 8). Although this appears to be a rather loose definition, which might be applied to a number of occupational groups, it highlights that what distinguishes a profession from any other occupational group is the level of abstraction of the knowledge, which it applies to accomplish given tasks. Only by pursuing a process of knowledge abstraction an occupation can validly be conceived as a profession. Therefore, being recognized as a profession does not only mean fulfilling standard requisites, such as being organized in an association, having an ethic code or being accredited by governments. As Abbott (1988) maintains, "[a]ny occupation can obtain licensure (e.g. beauticians) or develop an ethic code (e.g. real estate). But only a knowledge system governed by abstraction can redefine its problems and tasks, defend them from interlopers, and seize new problems" (p. 9). The possession of this body of abstract knowledge, is therefore the primary requisite, to which a profession claims for the exclusive right to control specific work activities, which Abbott (1988) identifies as the profession's *jurisdiction*. Hence, if occupations base their activities on pure technique, professions perform knowledge-based tasks, which in turn breed the development of practical skills.

What do professions do? Moving from a pure sociological view, Abbott (1988) maintains that "the tasks of professions are human problems amenable to expert service" (p. 35). The professional practice is based on three main acts: diagnosis, inference and treatment. Given a case, a practitioner first diagnoses it, i.e. (s)he classifies it into relevant categories, defined according to the body of knowledge, which her/his profession builds upon. Treatment proceeds from diagnosis and defines the 'instructions' to be followed to effectively settle the case. Nevertheless, much of the professional work builds upon the inference act, which relates the two other tasks. As the author maintains, "[t]he opening diagnosis is often clear, even formulaic. So also the endgame of treatment. The

middle game, however, relates professional knowledge, client characteristics, and chance in ways that are often obscure". (Abbott, 1988: 48). It is through inference that professionals thoroughly express and deploy the body of knowledge subtending their practice, by defining the most effective and efficient path to be followed to relate diagnosis to treatment. A professional can be therefore defined as a person, embodying professional abstract knowledge, acquired through formal, academic education, who applies this knowledge to diagnose, infer and treat problems with no definite, technical solutions, and which a society tend to attach a profound value to.

The idea of profession, and hence of professional, is crucial to define what a PSF is. The concept of PSF proceeds from the idea of profession. Beyond the archetypal distinction between knowledge-based organizations and labor- or capital intense ones (cfr. Løwendahl, 2005), the main distinction between traditional manufacturing firms and PSFs lies in the fact that all control or coordinating mechanisms, which are put into being for the efficient and effective operation of the activities of PSF's, can be regarded as directly coming from the need of the firm to act in accordance to professional norms and values. This occurs because professionals are primarily loyal to their profession rather than to their employer (Goode, 1957). Therefore, only a firm, which thoroughly internalizes professional norms and values, is likely to attract and retain practitioners and hence foster and sustain its reputation (Maister, 1993). Moreover, "[w]hen all or most of the employees of the firm are members of the same profession, they share the same internalized norms and code of conduct, and hence communication and coordination within the firm is facilitated. The firm can simply adopt the same code of conduct, and does not need to spend time and effort to teach it to employees" (Løwendahl, 2005: 27). These service firms are therefore identified as professional not because of the mere employing of practitioners, but because this occurrence compels them to fully incorporate these values, which are at the roots of its members' professional life and behavior.

1.4 The internal organization of PSFs

If the adherence to professional norms and codes of conduct represents PSFs' core distinctive characteristics, these firms are also identifiable by strong commonalities in terms of internal structures and processes. Although professional service industries are facing technological, competitive and regulatory changes, which are exerting a profound impact on the way PSFs are internally configured (Malhotra, *et al.*¸2006), the so-called P^2 form (Greenwood *et al*., 1990) can be still considered as the predominant organizational archetype in this field. "This form can be characterized in terms of structures, systems and underlying values embedded in notions of *partnership* and *professionalism.*" (Malhotra, *et al.*, 2006: 174. Emphasis in original). As previously showed, professionalism represents the central quality, which PSFs' identity builds upon. The notion of partnership, instead, refers to the way these firms are internally structured. PSF almost all feature a well-defined hierarchical structure, which contribute to define the so-called "professional pyramid" (Maister, 1993; Sherer, 1995). At the top of this pyramid stand partners, who own and control the firm, deal with client relations, supervise the engagements the firm takes up and manage the firm as a whole. At the base are juniors, who are assigned much of the 'legwork' needed to effectively settle the engagement (Maister, 1993).

The shape of the pyramid is determined by a crucial structural characteristic featuring PSFs, i.e. human capital leverage, which is formally defined as the ratio between junior and senior staff (Galanter and Palay, 1991; Maister, 1993; Sherer, 1995). Leverage allows the firm to provide its services with the most effective and efficient mix of junior and senior staff and hence thoroughly meet clients' expectations about the service they are supplied with. It is universally acknowledge that the core product PSFs supply to clients is human capital (Morris and Empson, 1998; Løwendahl, Revang, and Fosstenløkken, 2001. PSFs find their *raison d'être* in supplying clients with those skills, competences, knowledge, which these do not possess (Maister, 1993; Løwendahl, 2005). PSFs' overall human capital stock results from the combination of two distinct sources. One is represented

by “partners, who are the source or repository of firm knowledge” (Sherer, 1995: 671), while the other is embodied by “associates, employees who are acquiring knowledge and performing work for partners” (Sherer, 1995: 671). The former have extensive tacit, implicit knowledge, vast experience, high diagnosis, inference and treatment skills, while the seconds are still on their way towards the development of their human capital. According to the type of projects, which a firm decides to engage in, the mix of junior and senior staff is assumed to vary (Maister, 1993; Sherer, 1995: Jaffee, 2001). The more complex the engagement is, the more diagnosis and inference intensive its accomplishment will be and, hence, the higher the involvement of senior staff for its effective settlement. On the contrary, in projects displaying a rather programmatic nature, its execution can be effectively handled by juniors. A PSF therefore needs to set its leverage in accordance to the skills requirement of their engagement (Maister, 1993). In case a firm engages in highly complex cases and delegate their accomplishment to junior staff, it would be likely to create important quality risks, which might erode its reputation. On the other hand, if a firm employs senior staff to perform routine tasks, it is likely to suffer from the so-called ‘under-delegation problem’ (Maister, 1993; Løwendahl, 2005), i.e. an instance whereby high-priced staff (i.e. partners) would be asked to perform low-level tasks, which might be undertaken by an associate with equal results.

In order to keep the proportion between junior and senior staff always in balance, PSFs define their internal career paths according to a rather strict promotion mechanism, known as ‘up-or-out’ system (Galanter and Palay, 1991: Maister, 1993; Sherer, 1995; Morris and Pinnington, 1998). According to this rule, for a given, pre-arranged period of time, juniors would be given a salary to perform activities for partners and during which they get trained. At the end of this period, a percentage of these juniors will be awarded partnership, while the others will be out-placed. This promotion rule has a number of important influences on the organizational dynamics of these firms, which will be presented in a more details in the following chapters, in particular in Chapter 6. In general, however, “[u]p-or-out provides a solution to the problem of monitoring work levels where

outputs are difficult to measure, by providing a motivating mechanism wherein junior professionals exert great effort and handle cases with greater responsibility in return for the chance of the prize of partnership" (Malhotra, *et al.*, 2006).

Finally, the successful configuration of the pyramid, which results from the definition of the firm's leverage, has a profound influence on PSFs' profitability. As Maister (1993) maintains, "[p]rofits […] come, in large part, from the firm's ability, through its project team structure, to leverage the professional skills of the seniors with the efforts of the juniors" (p. 8). The widely acknowledged measure of profitability in PSFs is "profit per partner", which is usually regarded as corresponding to "return on equity" (R.O.E.) for traditional, manufacturing firms (Samuelson and Jaffe, 1990). In general, high leverage has been regarded as positively influencing profitability, since firms featuring this configuration have many juniors to generate revenues to be shared among few partners.

These characteristic of the 'professional partnership' (Greenwood, *et al.*, 1990) organizational form here presented, do not apply invariably to any PSF. Professional service industries do feature strong organizational diversity (Boone, *et al.*, 2000; Jaffee, 2001), which influences the way different firms are internally configured (Maister, 1993; Løwendahl, 2005). The next section will outline why this diversity emerges, which possible organizational forms can be identified and what differentiate them in terms of internal structures and processes.

1.5 Strategic and organizational differences in professional service industries

As Løwendahl (2005) claims, "[p]rofessional services are not the same" (p. 119). A number of studies have suggested that different PSFs can coexist within the same industrial context, providing possibly the same service, but to different types of clients and in a profoundly different fashion. For instance, Maister (1993) distinguishes between three categories of projects, which a PSF can decide to take up. The first are *Brains* projects, i.e. "problems […] at the forefront of professional or technical

knowledge, or at leas of extreme complexity" (Maister, 1993: 4). The second category of projects is identified as *Grey Hair*, which "may require a highly customized 'output' in meeting the clients' need, [although with] a lesser degree of innovation and creativity in the actual performance of the work that would a Brains project" (Maister, 1993: 4,5). The last category is that of *Procedure* projects, which "usually involve a well-recognized and familiar type of problems" (Maister, 1993: 5). Such segmentation of the demand for professional services leads the supply side of the market to be strongly differentiated, with *expertise-based* firms serving Brains clients, *experience-based* ones for Grey Hair projects and finally *efficiency-based* firms taking up Procedure works (Maister, 1993).

Løwendahl (2005) echoes Maister's suggestions and maintains that the emergence of organizational diversity in professional service industries is fostered by two forces, i.e. the type of resources, which the firm deploys to create value, on the one hand, and the type of projects, which it engages in, on the other. As she suggests, "some firms rely primarily on intangible resources that are controlled by individual professionals, whereas other firms rely primarily on organizationally controlled resources such as complex data systems, excellent practices and procedures, etc." (Løwendahl, 2005: 128). The relative emphasis a firm puts upon individual versus organizational controlled resources is a consequence to the type of clients, which they target and hence of the type of service they provide, which range from the provision of existing, familiar solutions to the development of thoroughly new services.

These distinctions among various organizational forms in the professional services industrial landscape are effectively seized and synthesized in the distinction provided by resource partitioning theory between generalist and specialist PSFs (Boone, *et al.*, 2000; Jaffee's, 2001). The first, identifiable with Maister's (1993) 'efficiency-based firms', provide a wide range of relatively standardized professional services. Specialists, on the other hand, which blend the characteristics of the 'expertise' and 'experience-based' firms, mainly focus on meeting very specific and highly technical needs of the overall demand for professional services. Given the generic, familiar, recurrent

and standardized nature of the service that they provide, generalist PSFs can effectively exploit economies of scale. Moreover, given the wide array of services these firms usually offer, they can also reap scope economies. Specialist PSFs, on the other hand, engage in a smaller selection of very specific, highly technical, often "one-go" projects. Although this prevents them to exploit scale and scope economies, specialists can still be profitable by applying higher fees, justifiable by the diagnosis-intensive, highly customized nature of the service, which they provide to clients (Maister, 1993; Sherer, 1995; Boone, *et al.*,, 2000; Jaffee, 2001). Scale and scope economies for generalists and personalization of the service for specialists therefore represent the main sources of competitive advantage, which they can respectively take advantage of (Boone, *et al.*, 2000; Jaffee, 2001). These different postures towards clients lead to these two types of PSFs to rely upon different resources and arrange their activities in a dissimilar fashion, in order to exploit these sources of competitive advantage. As Maister (1993) maintains, "every aspect of a practice group's affairs, from practice development to hiring, from economic structure to governance, will be affected by its relative positioning" (p. 22).

One of the most important differences between these organizations concerns the way they leverage their human capital. As previously claimed, the appropriate mix of junior relative to senior staff is largely established by the nature of the projects, which PSFs decide to engage in. Given that generalist PSFs usually engage in recurring, fairly standardized, highly programmatic projects, partners of generalist PSFs can delegate much of the accomplishment of their engagement to junior staff. Instances of non delegation would indeed turn out to be highly inefficient for generalists because of the 'under-delegation problem' (Maister, 1993; Løwendahl, 2005). Generalist PSFs therefore normally display a high human asset leverage ratio, i.e. a high proportion of junior relative to senior staff. On the other hand, the complex and idiosyncratic nature of specialist PSFs' engagements usually requires high diagnosis and analytical skills, which are unlikely to be possessed by juniors. Hence, the likelihood of delegation, and consequently the number of juniors that can be

effectively and efficiently employed, is extremely limited. Thus, specialist PSFs' human asset leverage ratio is generally low. As a consequence, the hiring process will be more intense in the case of generalists than for specialists.

Another crucial difference between generalist and specialist PSFs concerns the dynamics of the fund of knowledge these firms possess. Knowledge represents the core resource PSFs rely upon to perform their activities (Morris and Empson, 1998; Løwendahl, Revang, and Fosstenløkken, 2001). Such firms need therefore to effectively foster its development, if they want to attain and sustain a competitive advantage. The way knowledge is acquired, developed and used in generalist or specialist PSFs is, however, extremely different. According to Hansen, *et al.* (1999), companies can take two different approaches to manage their knowledge: the *codification strategy*, on the one hand, or the *personalization strategy*, on the other. The former is pursued by companies that "[p]rovide high-quality, reliable, and fast information-systems implementation by reusing codified knowledge" (Hansen, *et al.* 1999: 109), while the second features companies that "[p]rovide creative, analytically rigorous advice on high-level strategic problems by channeling individual expertise" (Hansen, *et al.* 1999: 109). This distinction closely mirrors the difference between the generalist and the specialist PSF, with generalist providing relatively standardized services to their customers and specialists granting high service customization thanks to the high involvement of partners' expertise in case settlement. By pursuing the *codification strategy*, the level of the overall stock of knowledge a company can develop is in general higher than the stock of knowledge of companies following a *personalization strategy*. In fact, according to Hansen, *et al.* (1999), the codification strategy draws upon the use of a "people-to-document" approach, by which knowledge "is extracted from the person who developed it, made independent of that person and reused for various purposes, [which] opens up the possibility of achieving scale in knowledge reuse" (p. 108). This cannot instead be achieved under the personalization strategy, since the peculiar nature of the services undertaken prevents the re-utilization of the knowledge used in previous cases. However, although the overall

stock of knowledge that specialist PSFs have is, in absolute terms, lower than generalists', the fund of human capital each single individual has in specialist firms appears to be more elevated than in the case of generalists and it is to a great extent embodied in senior staff. This occurs because, by spending a great share of time on solving a given case, partners of specialist PSFs not only obtain a deeper insight of that case, but they can effectively develop and refine their tacit knowledge to a far greater extent than partners of generalist firms would (Hansen, *et al.*, 1999).

Generalist and specialist PSFs show their main internal organizational differences with respect to the leverage ratio, which they display, which impacts on the intensity of the hiring process, and on the different acquisition, development and utilization of their fund of knowledge. Apparently, the generalist firm should be in a privileged situation to foster its profitability, since it displays a high leverage ratio, which is perceived as having a positive impact on profitability (Maister, 1993) and it can also benefit from a sort of 'knowledge scale economies' (Hansen, *et al.*, 1999). If high leverage is acknowledged as the best possible configuration to generate high profits, how can specialist PSF be profitable? If we follow Maister (1993), beside leverage, PSFs' profitability stems also from another important factor, i.e. productivity, which he defines as the "realized fees per hour" (p. 35). According to the author, if the leverage ratio is low, as in the case of specialist PSFs, the only viable way towards profit maximization is the application of high fees. Empirical evidence did show that specialist PSFs can manage to set their billing rates at a higher level with respect to generalists. For instance, Sherer's (1995) analysis of U.S. law firm's billing strategies showed that "going from an office that is completely diversified to one that is completely specialized would result in a $200-300 increase in their [hourly] billing rate" (p. 686). In particular, "it is the highly specialized offices with *low* leverage that have the highest billing rates" (Sherer, 1995; p. 687. Emphasis in original). According to the author, the viability of this billing strategy is essentially given by the fact that the services they provide deeply reflect senior staff's knowledge and experience (Sherer, 1995). However, the application of high billing rate is affordable mainly because specialists target clients,

who are willing and likely to pay for a premium price (Maister, 1993). Such premium price is justifiable by the high peculiarity of the services specialists offer and because the low-leverage configuration allows clients to deal directly with partners, thus effectively overcoming the lack of face-time with senior staff, which many clients often complain about (Jaffee, 2001).

On the basis of the reflections so far proposed, the determinants of profit (π) maximization for PSFs can be formalized as follows:

$$\frac{\Pi}{partner} = \left(\frac{\overline{fees}_{ass}}{associates} * \frac{associates}{partner} \right) * \lambda_{ass} + \overline{fees}_{ptn} * SM * \lambda_{ptn} \qquad [1]$$

where:

π stands for profits

λ_{ass} is the margin per associates

λ_{ptn} is the margin per partner

$fees_{ass}$ are the fees applied by associates

$fees_{ptn}$ are the fees applied by partners

SM stands for 'specialization multiplier'

partners is here (and in the whole dissertation) employed as a synonymous of senior staff

associates is here (and in the whole dissertation) employed as a synonymous of junior staff

Equation [1] builds upon two components, the former illustrating the contribution to profit provided by the work of juniors (first term), while the second showing the profit-generating role of the human capital endowment of the firm, mainly embodied in partners (second term).

The first part of equation [1] essentially represents the impact of the leverage structure on the profit per partner ratio. It essentially mirrors the relationship proposed by Maister (1993), according to which PSFs' profitability is driven by the combination of leverage (the associates to partner ratio), productivity (the fees to juniors ratio) and the margin for associates (λ_{ass}). This last variable is

assumed to be market-based and consequently not directly manageable by the firm. This is consistent with Maister's (1993) suggestion, according to which "the margin that a practice achieves is mostly a consequence of what is accomplished with productivity and leverage" (p. 33). Juniors' productivity is also assumed to be only partially manageable by the firm, since the associates' fee level is essentially market based. Still, support for this idea comes from Maister (1993), who claims that "[t]he market for the firm's service will determine the fees it can command for a given project" (p. 9). Therefore, the leverage ratio is the only component, which a PSF can directly manage, and which results from the mechanisms previously described. As we can see from equation [1], given the margin and productivity levels for juniors, here assumed to be exogenously determined, the higher the leverage ratio, the more profitable the firm is likely to be.

The second term of equation [1] defines in which way (partners') human capital contributes to PSFs' profitability. λ_{ptn} represents the margin per partner, while $fees_{ptn}$ represents partners' billing rate, which is still regarded as being market driven. SM stands for "specialization multiplier" and represents the extent to which, given the degree of customization of the service provided, partners can raise their fee levels over market standards, i.e. the generalist partners' fees. The higher the level of service personalization, the higher is the specialization multiplier.

As one can easily envision, these two processes operate differently for generalist and specialist PSFs. Generalist can maximize their profits mainly thanks to the first component of equation [1], since the generic and standardized nature of the engagements they undertake increases their leverage ratio, hence allowing them to take advantage of the efforts of juniors to generate extra revenues. Service standardization, however, impedes generalist to gain any benefit from the specialization multiplier, which instead represents the main source of profit for specialists, given that their low leverage structure hinders them to maximize profitability through juniors. Equation [1] builds onto the idea advanced by Løwendahl (2005), according to which one of the factors, on the basis of which it is possible to classify PSFs, concerns the type of resource they deploy in order to

create value. Generalists can be related to those PSFs, which Løwendahl (2005) regards as relying upon procedures to build their competitive advantage, i.e. on organizational controlled resources. Generalists can hinge on juniors to settle their engagements because the procedures to disentangle them are sufficiently standardized to allow delegation. On the other hand, specialist PSFs are identifiable with those firms, which Løwendahl (2005) considers as building their competitive advantage over intangible resources embodied in individuals, in this case partners' human capital.

1.6 Summary

This chapter has provided an overview of what PSFs are. After showing the relevance of the service sector in modern economies, with special concern devoted to the role played by professional service activities, this chapter aimed at defining what a PSF is, i.e. a service firm, whose professional character does not stem from the mere employment of professionals, but from its ability and obligation to embody the values and the norms, which professions build their identity upon. Moreover, it was also shown that these firms share many similarities in terms of internal structures and organizational processes, mainly related to the effective management of their crucial resource, i.e. people and their human capital (Maister, 1993: Sherer, 1991; Morris and Empson, 1998; Løwendahl, Revang, and Fosstenløkken, 2001; Jaffee, 2001).

The most relevant insight presented in this chapter concerns the idea that PSFs are not all the same (Løwendahl, 2005), but they may vary according to the type of projects they decide to undertake and to the kind of resource, which they build their competitive advantage upon. These differences are effectively seized in the distinction proposed by Boone, *et al.* (2000) and Jaffee (2001) between generalist and specialist PSFs. The first offers a wide range of diversified services, while the second tends to focus on very specific needs of the overall demand for professional services. As it was shown, these different strategic positions lead these two types of firms to configure their internal structures and processes in a different way, in order to fully exploit the competitive power of

their respective key strategic resource, i.e. junior staff, for generalists, and partners' specialized knowledge, for specialists. Such differences are summarized in Table 1.1.

	Generalist	**Specialist**
Clients	Routine cases Looking for efficiency Fee-sensitive	Complex cases Looking for effectiveness Fee-insensitive
Leverage	High	Low
Hiring	Strong	Moderate
Knowledge	Codified, re-usable, explicit	Personalized, expert, implicit
Billing rates	Low	High
Source of Profitability	Associates	(partners') Knowledge

Table 1.1 Strategic and Organizational Differences between Generalist and Specialist PSFs

These suggestions about the internal organization of the generalist and the specialist PSFs represent the theoretical foundations, which the simulation model developed to conduct experiments in this dissertation will be based upon.

Chapter 2
Methodological Approach

2.1 Introduction

The aim of this chapter is to provide an overview of the methodological approach employed in this dissertation, i.e. computer simulation. Simulation is a rather unusual approach within the scientific methodological landscape, especially in the broad field of social sciences, which mostly proceeds along the two traditional forms of enquiry, i.e. theoretical analysis (deduction) or empirical analysis (induction). Although some of the most preeminent scientific contributions in the domain of social sciences are simulation-based, as in the case of Cyert and March's (1963) behavioral theory of the firm or Cohen, March and Olsen's (1972) garbage can model, it is only during the 1990s that simulation has started to appear with regularity in social sciences journals (Harrison, *et al.*, 2007), thus becoming a third way of doing science, beside induction and deduction (Axelrod, 2003).

Despite this upsurge in its utilization, simulation is still far from being universally accepted as a research method in the scientific landscape, especially in managerial-related disciplines. Axelrod (2005) showed that, on the basis of observations from the 'Social Science Citation Index' in 2002, the articles that had the word 'simulation' in their title were 77, dispersed over 55 different journals covering nearly all of social sciences related disciplines, i.e. from anthropology to public policy, through management, economics and organization theory. Harrison, *et al.* (2007) assessed the proportion of simulation-based articles published in leading social sciences journals over the period the period 1994-2003. What they showed is that simulation is most frequently used in psychological journals, while management and sociology display the lowest publication frequencies. Many commentators advocate that this might be a consequence of the lack of familiarity that many scientists, in particular in the field of management, have with this methodological approach (Hanneman, *et al.*, 1995; Davis, *et al.*, 2007; Harrison and Carroll, 2006; Harrison, *et al.*, 2007). This chapter will therefore attempt to describe what simulation is, its advantages with respect to

traditional forms of enquiry, and how it can contribute to the advancement of social sciences theories, with a specific concern to managerial ones. Against the backdrop of these general reflections, this chapter will illustrate why simulation represents the best methodological approach in this dissertation, in order to describe and analyze the internal organizational dynamics in the specialist and the generalist forms in professional service industries.

This chapter will be organized as follows. The first section will show where simulation sets within the domain of research methodologies and what its advantages with respect to inductive and deductive forms of enquiry are. Next, a definition of what simulation is and its characteristics and purposes will be provided. Subsequently, after a brief overview of the possible types of simulation models that are available, the simulation approach employed in this dissertation, i.e. System Dynamics (SD), will be presented. Finally, it will be shown how this approach can effectively be employed to represent and analyze the internal organizational dynamics of the specialist and generalist PSFs forms.

2.2 Forms of Scientific Enquiry

"Historically, scientific progress has relied on two approaches: theoretical analysis or deduction, and empirical analysis or induction" (Harrison*, et al.*, 2007: 4). In the former case, a series of theoretical assumptions is formulated, often in form of mathematical relations, and the consequences of such assumptions are deduced via mathematical derivation. Drawing upon the logic and the rigor mathematics imposes, deduction contributes to the refinement of the consistency and robustness of a verbally-formulated theory. Induction, instead, originates from the examination of the behavior of given phenomena, which is then analyzed to infer and reveal relationships among observed variables. Both these approaches, however, might not always be viable. Deduction can be problematic in cases where the system of equations, which the theory builds upon, cannot be solved analytically. This appears especially true when managerial and organizational systems are under investigation, since they often build upon numerous, strictly interconnected processes, hence making

their investigation via analytical methods difficult to accomplish (Harrison *et al.*, 2007). As a consequence, the theorist might be unable to derive any solution or might be forced to revise and simplify the theory's assumption, thus possibly hindering the ability of such theory to represent realistic behaviors or making it valid only to explain special cases (Hanneman, *et al.*, 1995; Harrison, *et al.*, 2007). One of the major problems with induction refers to the ability to obtain data to infer how variables relate to each other to give rise to given behaviors. Some variables can indeed be invisible or difficult to measure. In such instances, the researcher would therefore be unable to effectively infer relationships among the variables under investigation (Harrison, *et al.*, 2007).

Simulations can effectively overcome such problems. On the one side, simulations can be helpful methods for gaining insights about the behavior of a system first when data limitation exists (Zott, 2003), since they generate their own data (Hanneman, *et al.*, 1995; Davis, *et al.*, 2007: Harrison, *et al.*, 2007). For instance, Harrison and Carroll (1991; 2001a; 2001b; 2002; 2006) employed simulation as a method to explore the process of cultural transmissions in organizational settings. Culture and the processes allowing its transmission are difficult constructs to outline and measure, hence unbiased and thus reliable measures cannot be easily obtained. Thanks to simulation, however, Harrison and Carroll (1991; 2001a; 2001b; 2002; 2006) managed to gain relevant insights into the dynamics implied in the process of organizational culture transmission despite the lack of relevant available data. Secondly, simulations appear to be a valuable research method to overcome the problem of analytical intractability, which deductive investigations might suffer of, since solutions can be computed by employing a numerical approach (Harrison, *et al.*, 2007). This is remarkably beneficial when the system under investigation builds upon multiple, simultaneously-operating processes, exactly as many managerial and organizational processes often are. In fact, if one might grasp the behavior of each of these single processes, their joint operation might lead to non-obvious, sometimes even counter-intuitive outcomes, especially when they unfold over time (Forrester, 1971; Harrison and Carroll, 2006). This concern has been at the roots of the previously

cited Harrison and Carroll's (1991; 2001a; 2001b; 2002; 2006) cultural transmission model, but simulation has been employed in a number of other studies employing simulation as a theory development or refinement tool, as Lomi and Larsen (2001), Larsen and Lomi (2002); Hanneman, *et al.* (1995), Sastry (1997), Zott (2003), just to cite a few.

Simulation can therefore be regarded as an effective and valuable research tool, which allows, on the one side, to increase the rigor and robustness of a theory precisely as deduction would even in cases where the number of variables and interactions among them is too elevated to be effectively treated with analytical methods. On the other hand, simulation allows making inference among output data generated by the rigorous specification of the rules governing a simulation model, which overcome the problem of obtaining empirical observations.

2.3 What Is Simulation?

This section will provide a more detailed description of what simulation is, for which purposes it can be used, thus allowing a better and deeper understanding of the context where it can be fruitfully applied.

As Harrison *et al.* (2007) claim, simulations can be regarded as a formal model, i.e. "a precise formulation of the relationship among variables, including the formulation of the processes through which the values of variables change over time, based on theoretical reasoning" (p. 1232). Formal models allow a theory to be *clear*, being built upon an unambiguous and accurate language; *easily comparable*, since the assumptions it creates are defined into general categories applicable to various contexts; endowed with *logical power*, since the results it produces are subjected to the test of logical consistency, and *transparent*, since it makes explicit the relationship between assumptions and results (Kreps, 1990). The rigor and precision, which formal modeling imposes, represents the fundamental strength of simulation. As Harrison, *et al.* (2007) assert, "formalization promotes

scientific advancement by forcing cloudy areas to be addressed, resulting in a clear specification that can be subjected to analysis and subsequent refinement" (p. 1233).

Given a specified system behavior, which one aims at investigating, the construction of a simulation model means defining which variables characterize the structure of the system under investigation and assigning them behavioral rules, expressed in form of mathematical equations or computational rules, which identify in which way these variables would behave in a given time step. On the basis of the computational model describing the behavior of a given system, the modeler is able to conduct experiments on the possible operation of such system. As Harrison, *et al.* (2007) suggest, the design of an experiment consists of five elements: the initial conditions, the time structure, the outcome determination, iterations and variations. Initial conditions must be specified since the computational model defines how variables would change from time *t* to time *t+1*, but it does not identify the system's status at time 0, which is therefore to be defined by the modeler. The time structure of the simulation, either in terms of overall time span and of each simulation time period, needs to be specified in order to make the length of the simulation match reality. For instance, one of the crucial components of the model developed here deals with the demographic structure of PSFs, defined around two hierarchical levels, i.e. associates and partners. In order to make a realistic representation of the time an associate spends before becoming partner, the simulation time period needs to correspond to actual promotion periods observed in PSFs. The simulation outcomes are pieces of behavior, which the modeler aims at investigating and which result from the operation of the simulation model.

Simulations can be either stochastic, i.e. containing probabilistic components, or deterministic, i.e. without probabilistic elements. Moreover, unlike in deterministic case, in the stochastic simulations, outcomes vary from run to run, hence the results of each single simulation run might not thoroughly demonstrative of the system's behavior. In order to assess the average behavior of the system, the simulation needs to be run many times and summarized. System's behavioral

variations might also be of interest, since the model might aim at assessing how outcomes can vary when initial conditions or the simulation's parameters are modified or how the system behavior is sensitive to such changes (Harrison and Carroll, 2006).

Simulation models can be employed to attain various research aims. As Axelrod (2003) suggests, simulation can be used for

- *prediction*, i.e. used to reveal possible future behaviors of a system, which can be prone to further empirical testing;
- *performance*, i.e. employed to perform some activities that could be hard to be accomplished by human beings. Artificial intelligence applications can be regarded as being a simulations used to improve performance;
- *training*, i.e. as a method to instruct people to perform given tasks within a fair, though virtual, representation of a given environment (e.g. flight simulators);
- *entertaining*, e.g. flight simulators used not to train pilots, but for leisure purposes;
- *education;* i.e. simulation employed for schooling purposes (e.g. SimCity);
- *proof*, i.e. used to assess the 'existence' and truthfulness of hypothesized system's behaviors;
- *discovery*, i.e. employed to reveal new and possibly unexpected system's pieces of behavior or relationship among system's variables.

Harrison, *et al.* (2007) complement this list by advancing other possible research purposes attainable with computer simulation, such as:

- *explanation*, i.e. using simulation to understand which processes produce given behaviors;
- *critique*, i.e. assessing the value of preceding theoretical explanations of given phenomena and possibly provide simpler theoretical justification for their occurrence;
- *prescription*, i.e. suggesting via simulation enhanced methods to accomplish given tasks or arranging organizational processes;
- *empirical guidance*, i.e. opening the possibility for new empirical research path by uncovering new relationships among variables previously deemed as being unrelated.

In general, simulation-based research can be defined as a research method allowing the execution of virtual experiments, thanks to which it is possible to uncover mechanisms at the roots of the emergence of given empirical phenomena that pure analytical deduction or empirical observations did not manage to detect or explain.

2.4 Types of Simulation Models

A researcher, who has identified simulation as the best methodological tool to employ to conduct his/her research, can choose among a number of different approaches. This section will outline the main characteristics of the most important typologies of simulation models.

Simulations can be first classified into two main classes: agent-based and equation-based. In the former case, the modeler simulates the behavior of a set of agents, who adaptively learn and modify their behavior on the basis of the interactions among them. The overall system behavior emerges from such inter-agent interactions. In equation-based simulation, the model is identified by a set of equations, which defines in which way the structural variables of a system relate to each others to give rise to certain behaviors (Parunak, *et al.,* 1998). Within these two main categories, various simulation approaches can be identified. Under the label of agent-based models are:

- *NK Fitness Landscape.* Initially developed in biological research contexts, the NK approach "focuses on how rapidly and effectively a modular system adapts to each an optimal point, especially when interactions among the system components are curial" (Davis, *et al.*, 2007: 590). Given N possible system states and K possible interactions among them, the NK approach aims at assessing how fast an actor reaches an optimal point within the landscape of possible solutions. An example can be found in Gavetti and Levinthal (2000) investigation of the effect experiential learning has on the time an organization needs to find an optimal policy.

- *Genetic Algorithms*. This simulation approach aims at assessing how fast a population of agents with different attributes adaptively learn and evolve. This evolution occurs through a stochastic process of variation-selection-retention, which eventually lead the best performing agents to prevail. An application of genetic algorithms can be found in Bruderer and Singh (1996), who investigate the evolution of a population of 250 organizations

endowed with 20 routines in order to assess the effect of learning in organizational evolution and discovered through this method a positive impact learning has on the likelihood of an organization to discover an effective and efficient organizational form.

- *Cellular Automata*. Developed initially in physical sciences, cellular automata aim at assessing how macro-level phenomena emerge from the micro-level interactions of spatially interconnected agents. Lomi and Larsen (1996) employed this simulation approach to assess how micro-level interactions among organizations, defined in terms of legitimation and competition, influence a given population's founding and failure rates, thus determining its density.

The equation-based simulation type relates to two main simulation approaches:

- *Discrete event simulation*, where the operation of a system is simulated as a sequence of chronologically subsequent events, with any event occurring at given moments in time make the state of the overall system change. Such approach has been applied to understand a number of manufacturing processes, in order to enhance their efficiency. (Davis, *et al.,* 2005). On the other hand, equation-based simulation is connected to the System Dynamics approach (Forrester, 1961: Sterman, 2000). This simulation method appears to be useful to detect "how causal relationships among constructs influence the behavior of a system" (Davis, *et al.,* 2005: 588). Usually this approach is employed to assess how specific initial conditions affect the evolution and stability of a system. the simulation approach employed in this dissertation being System Dynamics, a more detailed description of its characteristics will be advanced. On the basis of this picture, the rationale for which it has been here chosen as a research inquiry tool will be proposed.

2.4.1 The System Dynamics Simulation Approach

The origins of System Dynamics (SD) can be traced back to the 1950s with work of Jay Forrester and colleagues at the Sloan School of Management of the Massachusetts Institute of Technology, who applied the idea of feedback control systems to the investigation of industrial systems behaviors (cfr. Forrester, 1961). One of the most relevant contributions of SD was Forrester's (1969) *Urban Dynamics*, where the author employed an SD simulation model to examine the population growth trajectories of cities like Manhattan, Detroit, Chicago. This model represented cities as a system where industries, housing and people were highly interrelated and their interaction gave rise to important demographic dynamics. This study showed in particular that many urban policies could be either useless or even harmful. For instance, it showed that a policy of building low income housing creates a poverty trap that would lead a city towards stagnation, while a policy of tearing down low income housing would create occupation and a rising standard of living for all of the city's inhabitants. Other example of important applications of the SD simulation approach can be found in Forrester (1971) *World Dynamics* and Meadows, *et al.* (1972) *The Limits to Growth.*

Despite the controversial results Forrester and colleagues' studies have had, they reveal an important aspect of social systems, i.e. they can often show a counterintuitive behavior (Forrester, 1971). Any social system is perceived as an arrangement constituted by numerous elements. The operation of each of them might be fairly straightforward. However, given the tight connection between the system elements, their joint operation, especially over time, might give rise to an unexpected system behavior. This is identified as *dynamic complexity* (Sterman, 2001). Complexity is a feature of most social systems. It is however difficult to understand, since this would mean being endowed with *system thinking*, i.e. the ability to perceive such systems as a whole, where "everything is connected to everything else" (Sterman, 2001: 10). Many factors make it difficult to think in a systematic way and it is by attempting to fill such mental model gaps that the SD approach bases its value. These elements include:

1. *Feedbacks*. A system's behavior is frequently regarded as stemming from a series of events linearly and sequentially interconnected among each others. Therefore, if we create an event A, we expect B to occur. Nevertheless, "real systems react to our interventions" (Sterman, 2001: 12). This is the core essence of feedbacks, whereby the results attained by an event modify our perception of the situation we are facing and therefore our future actions. In order to represent the feedback structure of a system, causal connections among system variables first need to be identified and characterized. Such relations can be either positive or negative. A positive causal link between variable *x* and variable *y* is formally defined as:

$$x \rightarrow^{+} y \Rightarrow \frac{\partial y}{\partial x} > 0; \qquad [1]$$

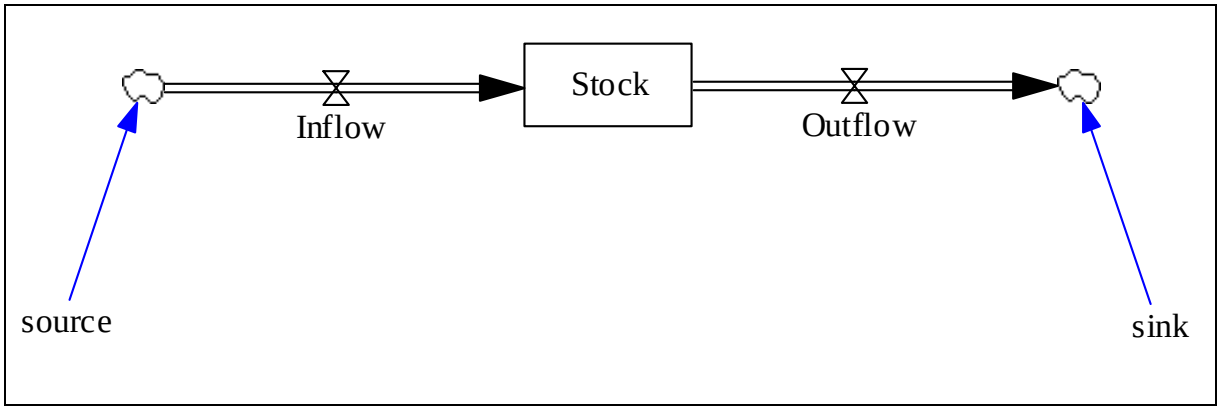
while a negative causal relations can be defined as:

$$x \rightarrow^{-} y \Rightarrow \frac{\partial y}{\partial x} < 0; \qquad [2]$$

Positive relationship refers to a condition in which a casual element, X in this case, positively influences Y, which means that when X increases, Y will increase more than it would have occurred in absence of X. When X negatively influences Y, when X increases, Y decreases more than it would have occurred in absence of X.

When such relations combine into a complete loop, a *feedback loop* emerges. The combination of feedback loops defines the structure of the system under investigation. The dynamic behavior of a system arises from the interaction of two basic feedback loops: *positive* (or *reinforcing*) and *negative* (or *balancing*) (Sterman, 2000). The former emerges when, given a change in any of the variables that form the loop, this is amplified. If, on the other hand, such change is counteracted, the feedback is negative. The dynamic behavior generated by a positive feedback loop is exponential growth/decline, while negative feedback produces asymptotic growth/decline.

2. *Time Delays*. It is quite common to experience a time delay between the moment a decision is made and the manifestation of its consequences on the state of the system. These might lead the system to experience fluctuations around the system's desired state. As a consequence, decision makers often try to intervene to close the gap between the actual and the desired system state. However, this only amplifies the instability of the system. SD has the advantage to allow time delays to be made explicit, thus avoiding the likelihood of reinforcing a system's instability.



3. Stocks and Flows. Causal loop diagrams are extremely useful tools to provide a representation of the structure of a system in terms of causal relationships among variables. However, "[c]asual loop diagrams can never be comprehensive […]. They are also never final, but always provisional" (Sterman, 2000: 166). Feedback loop diagrams can be regarded as valuable for providing qualitative explanations about the behavior of a system, by showing how variables influence each other (Sterman, 2000). Nevertheless, they do not tell anything about the nature of these variables. In particular, they do not tell anything about the so-called 'stock and flow' structure of the system. Stocks are the system's accumulators, which define the state of the system at each time step and provide information, which decisions and actions can be made upon. Stocks can be regarded as the accumulation of resources. In a managerial setting, such resources can be tangible such as cash, inventory, and workforce, or intangible such as knowledge or morale. The level of a stock can be influenced only by its connected flow, specifically an inflow, which increases its level, and an outflow, which decreases it. Flows can therefore be regarded as the system's activities. Examples of flows in a

firm can be production (which increases a company's inventory) and shipments (which reduce it); hiring (which increase the overall workforce) and layoffs (which reduce it). Figure 2.1 provide a representation of the notation used to identify stocks and flows in SDs.

Stocks are identified by a rectangle; an inflow is identified as a straight arrow pointing towards a stock, while an outflow as an arrow pointing out of the stock. Both flows have a valve, which symbolizes the control of their intensity. Finally there are clouds, being the source or the sink of flows and which stand as the system's boundary. Formally, a stock can be conceived as an integral equation, i.e.

$$Stock(t) = \int_{t_0}^{t} \left[Inflow(s) - Outflow(s) \right] ds + Stock(t_o) . \qquad [3]$$

As Davis, *et al*., (2007) maintain, "System Dynamics is particularly applicable for understanding the behavior of systems with complex causality and timing. Research questions are often framed as asking how specific initial conditions affect the stability of the system" (p. 589). It is a particularly useful simulation method to employ when one is interested in assessing the behavior of a system conceived as a whole, hence not emerging from the various agents, which might be part of it. This means, for instance, that when modeling the behavior of an organization, the modeler considers its structural and organizational elements in aggregate terms and considers the relationships among system variables straightforwardly, without assessing the role each single individual plays in this organization.

Table 2.1 Stock and Flow Diagrams Notation

2.5 Why Using Simulation in This Dissertation?

After having presented the main characteristics of computer simulation modeling as a research enquiry tool and the features of the different simulation types, the rationale that makes simulation the most suitable tool to employ in this dissertation is here presented.

As maintained in the introduction, this dissertation's main research aim is understanding why organizational diversity emerges, by complementing the suggestions provided by resource partitioning theory about the industrial dynamics fostering the emergence of such diversity, with an analysis of the internal processes featuring the operations of the generalist and specialist organizational forms in the professional services industrial context. These organizations are internally configured as a system of tightly interdependent processes (e.g. human resource systems, knowledge development processes, financial systems). As Harrison and Carroll (2006) claim, "[c]omputer simulations seem […] especially helpful in studying the behavior of complex systems, or systems composed of multiple interdependent processes. In such systems, each of the individual processes may be simple and straightforward, and each may be well understood by previous research or at least well supported theoretically. But the outcomes of the interactions of the processes may be far from obvious, especially over time" (p. 35). Simulation therefore appears to be helpful in this context, since it allows to assess the contribution and the role that internal organizational processes have on the profitability of PSFs and allows to make experiments on the role of these processes have in fostering the competitive advantage of different organizational forms, as exemplified in the distinction between the generalist and the specialist PSFs.

Simulation is also a suitable research tool in this case because the empirical evidence about the internal organizational processes that foster PSFs' profitability is limited to the study of large and successful organizations (Løwendahl, 2005; Malhotra, *et al.*. 2006). In order to catch the operations of these mechanisms in specialized firms, one can only refer to fragmented theoretical propositions. The use of simulation is therefore attractive in this case because it allows, on the one side, to subject the theoretical propositions concerning the operations of specialist PSFs to the test of logical consistency. On the other hand, through simulation it is possible to compare the results the model produces about generalist behavior with empirical observations. Finally, it will be possible to assess whether the results, which the model produces, are consistent with the industrial patterns outlined

in resource partitioning theory. Overall, simulation allows deepening our understanding organizational diversity in professional setting, thus possibly setting up hypotheses that might prove to be useful for further, empirical testing.

The employment of an equation-based simulation technique, specifically System Dynamics, instead of an agent-based one, stems from the fact that PSFs' profitability is here conceived as resulting from the operation of internal organizational processes considered in aggregate terms and not from the interaction among individual members of such organizations. Moreover, these processes connect among each other via tight causality chains, as it will be shown in Chapter 3, when the model will be presented, and the SD simulation approach is the most suitable to effectively depict the causality relationship, which a system structure builds around.

2.6 Summary

This chapter provides an overview of the methodological approach employed in this dissertation, i.e. computer simulation. After showing the role simulation holds in the scientific enquiry methods landscape, its characteristics and the research purposes that it can help to attain have been presented. Subsequently, an overview of the mostly used simulation types has been offered, with a special concern devoted to System Dynamics, i.e. the simulation approach applied in this research. Beside showing the value simulation has in this dissertation, this chapter also aimed at potentially contributing to increase the appreciation of the potential of simulation as a methodological tool in managerial and organizational research.

Chapter 3
The Model

3.1 Introduction

This chapter describes the simulation model developed to investigate the internal organizational dynamics of PSFs. The structure of this chapter will follow the steps needed to build a simulation model in System Dynamics (SD). The first step is the identification of the variables, which the structure of the system builds upon and then determine the causal relationships among them, thus leading to the representation of the feedback structure of the system under investigation. In this case, such causal representation identifies in which way a PSF arranges its internal structures and processes in accordance to the strategic orientation, which it decides to take, i.e. generalism or specialism. Next, this feedback loop representation needs to be formalized, i.e. the functional forms of the relationships among constructs are to be defined, values to parameters and state variables assigned, thus allowing the model to be set in motion. Although the model draws upon the theory about PSFs in general, it focuses on the behavior of a specific typology of professional firms, i.e. law firms, which have often been selected as an empirical ground to test hypotheses about the operation of PSFs (e.g. Galanter and Palay, 1991; Sherer, 1995; Hitt, *et al.* 2001, Jaffee, 2001), being regarded as "an organizational 'genus' of professional service firms" (Jaffee, 2001, p. 11).

3.2 Identifying Constructs

The first step towards the formalization of a model in SD terms is the identification of the constructs, which the structure of the system builds upon. This is an extremely important step, since it allows identifying and coding the variables relevant for the simulation. As it was extensively claimed, the main object of this dissertation is the identification of the role internal organizational processes and structures play in shaping the evolution of PSFs' in the alternative generalist and specialist organizational forms. This analysis will attempt to provide a micro-level explanation for the emergence of organizational diversity, which would complement the suggestions advanced by

resource partitioning theory, which are based almost exclusively on the analysis of industrial dynamics. The first task to be accomplished is therefore identifying which are the main organizational elements and mechanisms, which is at the roots of the operations of PSFs and how they differ in relation to the generalist and specialist practice. At the end of Chapter 1, these organizational differences have been sketched. These result from a textual analysis conducted during the review process of the literature on the strategic management of PSFs. The most relevant statements describing the operation of organizational elements and mechanisms featuring PSFs in either the generalist or the specialist practices are summarized in Table 3.1. I decided to directly quote such claims, instead of briefly summarize them, in order to show and enhance the theoretical strength of the model here developed.

Construct	Generalist	Specialist
Type of client	"clients who were mostly interested in the efficiency with which the firm dealt with low-risk, familiar types of problems." (Maister, 1993: 26)	"The client's problem is at the forefront of professional or technical knowledge, or at least of extreme complexity" (Maister, 1993: 4)
Leverage ratio	"[Project generalist PSFs undertake] usually involve the highest proportion of junior relative to senior time" (Maister, 1993: 5)	-"The opportunities for leveraging the top professionals with juniors are relatively limited" (Maister, 1993: 4). -"Typically […] the ratio of associates to partners is lower than in big firms" (Galanter and Palay, 1991: 125)
Hiring	"the firm's hiring needs would expand *[with respect to those of specialists]* to include a major role for less skilled professionals" (Maister, 1993: 25. Emphasis added)	"The firm would need to seek out […] only the top percentile graduates from the best schools, in order to […] meet the quality needs of the frontier practice" (Maister, 1993: 23)
Knowledge	"the efficient reuse of codified knowledge is essential because they are dealing with similar problems over and over." (Hansen, *et al.*, 1999: 110)	"strategy consulting firms offer the clients advice that is rich in tacit knowledge" (Hansen, *et al.*, 1999: 110).
Billing rates	- "By leveraging its high-cost seniors with low-cost juniors, the professional firm can lower its effective hourly rate" (Maister: 8) - "It makes sense for a highly leveraged partnership to discount the value of partners as expressed in their billing rates and charge more through associates" (Sherer, 1995: 685) - "Generalist law firms can also reap major scale advantages, which are passed down to clients in lower legal fees" (Jaffee, 2001: 5)	"law offices with a low leverage ratio and a high specialization rate […] had the highest billing rates for partners, reflecting their ability to provide clients with a service that deeply embodies the knowledge and expertise of partners" (Sherer, 1995: 688) "because their clients' problems are difficult and one of a kind, consultants can charge high fees for their services" (Hansen, *et al.*, 1999)
Source of profitability	"profits from increased leverage offsetting the generally lower billing rates" (Maister, 1993: 24)	"the firm would make its profits through high billing rates […], justifiable and sustainable because of the criticality, complexity and risk in the client engagement" (Maister, 1993: 23)

Table 3.1: Summary of the main strategic and organizational differences between generalist and specialist PSFs

3.3 Identifying Feedbacks

Once identified the main variables and processes, which distinguish a generalist from a specialist PSFs, the next step is to define in which way they relate to each others. This exercise enables to define the feedback loop structure governing the arrangements of PSFs' structures and processes.

On the basis of the theoretical suggestions showed in Table 3.1, one can easily observe that a generalist PSF's profitability stems almost exclusively from its high leverage structure, i.e. the number of associates working for every single partner of the firm. For a PSF taking a generalist strategic orientation, the most important decision is arranging it internal practices to allow hiring as many associates, as can be effectively be sustained by the number of partners. By focusing on the hiring process, the overall number of associates, which the firm employs, obviously rises, thus increasing the leverage ratio. As Maister (1993) claims, "[p]rofit […] come, in large part, from the firm's ability, through its project team structure, to leverage the professional skills of the seniors with the effort of juniors" (p. 8). Hence, the higher the leverage ratio, the higher the sources of revenues, which consequently increase the profits a generalist PSF can make. Given this positive relationship between leverage and profits, the firm will be likely to reiterate its investment decision in hiring associates, thus strengthening this positive relationship. This mechanism is portrayed in Figure 3.1.

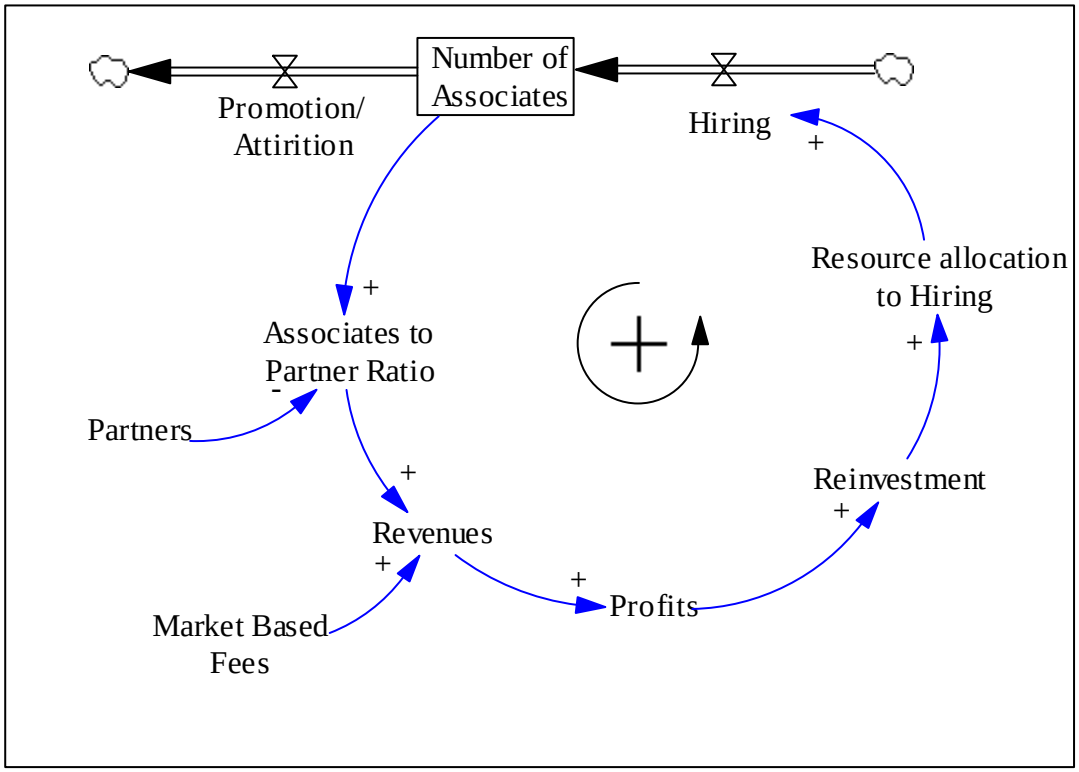


Figure 3.1 Generalist Feedback Loop

Specialist PSFs, instead, base their profitability on the ability of partners to raise their fees over standard levels, thanks to the highly specialized knowledge, which they employ in case resolution. Therefore, their internal structure is primarily concerned towards the arrangement of processes allowing the effective acquisition and development of partners' expertise. The more expertise partners have, the more specialized the service, which they offer to clients. Thanks to this service personalization, partners of specialized PSFs can apply a 'premium price', which makes their fees rise over market levels, and which positively impacts on the revenues they can generate, thus fostering their firm's profitability. Even in this case, given the positive relationship established between specialized knowledge and profits, the specialist PSF will be likely to reinvest part of such profits into the acquisition and development of new specialized expertise. These causal relationships are represented in the feedback loop in Figure 3.2.

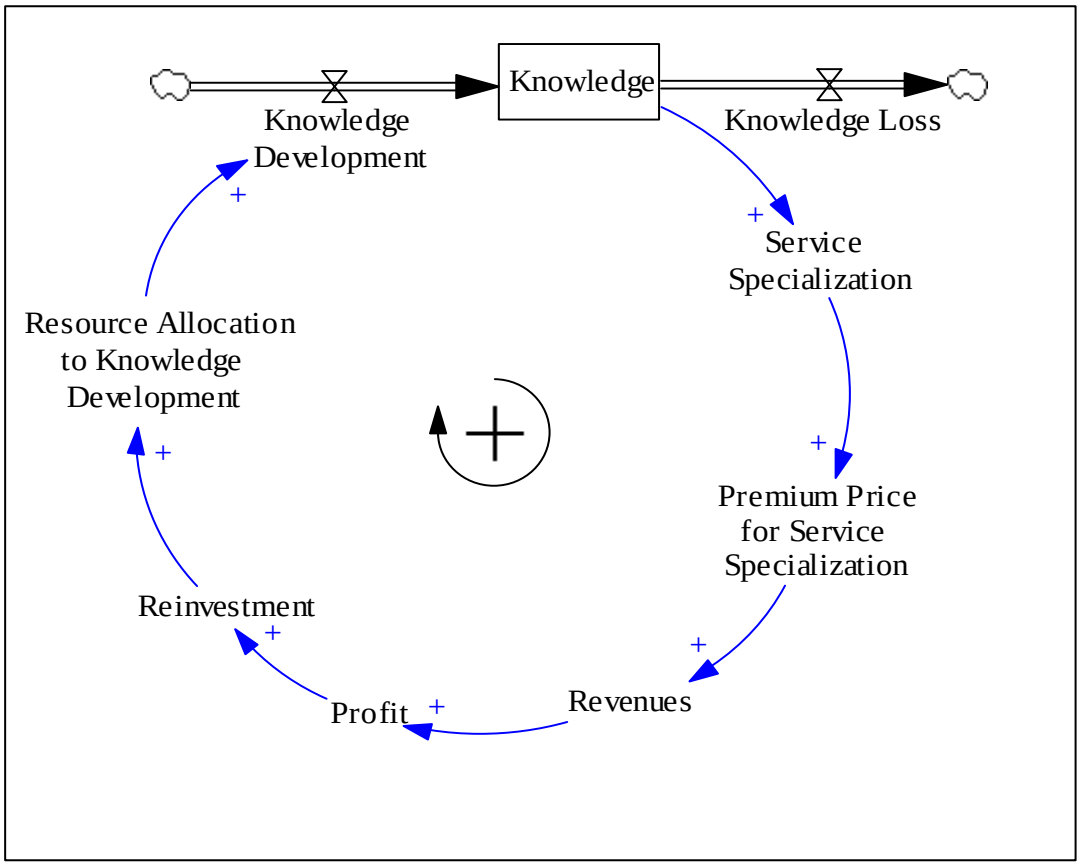


Figure 3.2: Specialist Feedback Loop

Both the feedback loops presented in Figures 3.1 and 3.2 are reinforcing, i.e. defining a causal system strengthening any change, which any of the variables forming the loop receives. These two reinforcing feedback loops can more realistically be regarded as operating jointly, since any PSF needs to have associates to accomplish routine tasks, if it wants to avoid the under-delegation problem, and they all need to foster new knowledge acquisition and development, if they want to sustain their reputation. The combination of these feedback loops provides the fundamental causal structure of the simulation model here developed and which can be regarded as the causal loop translation of equation [1] presented in Chapter 1. The combined feedback is showed in Figure 3.3[1].

Despite both the generalist and the specialist feedback loops operate in every PSF, a firm must

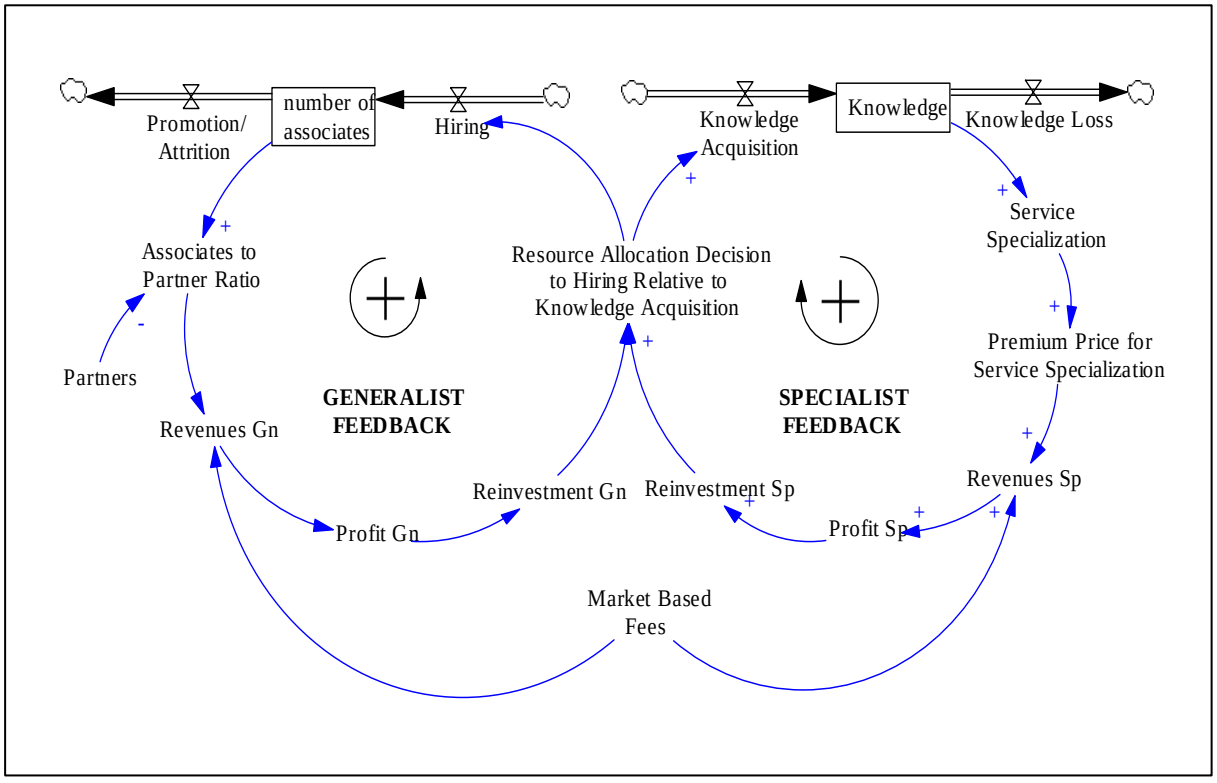


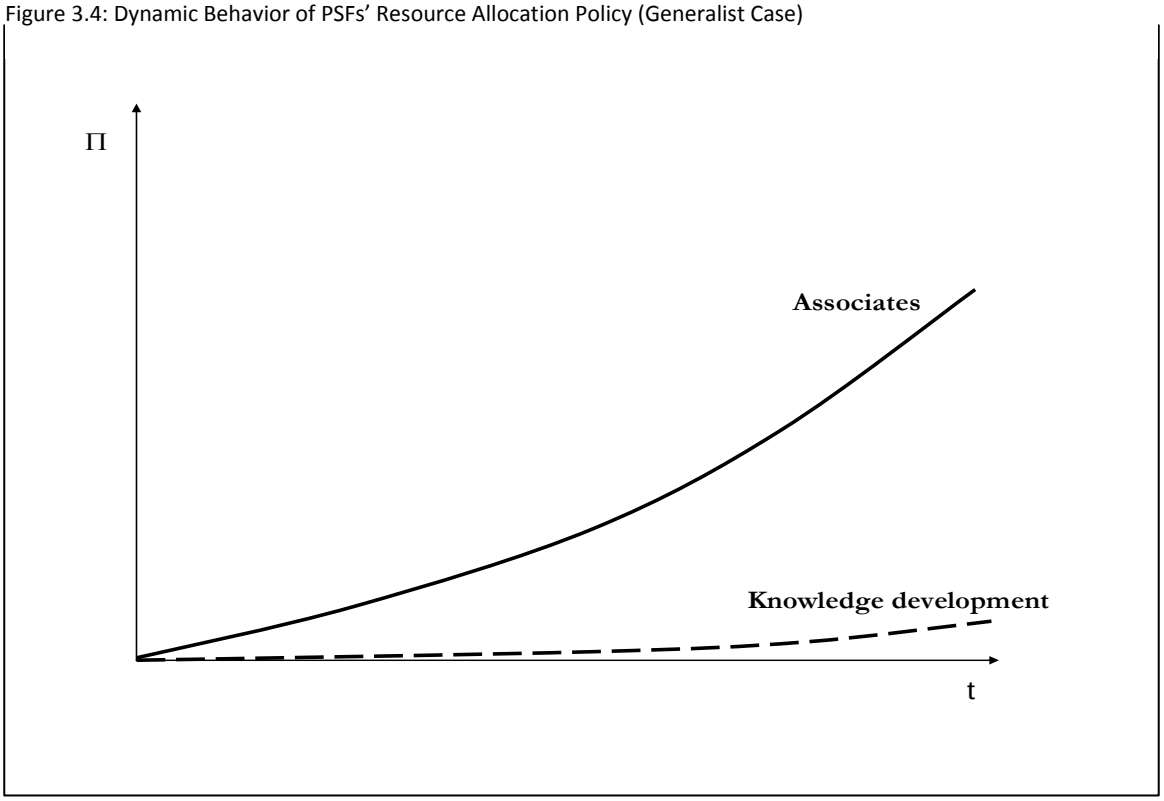
Figure 3.3: A feedback Loop Representation of PSFs' Resource Allocation Policy (Generalist Case)

set its strategic orientation in a definite way and arrange its activities correspondingly, otherwise it would be unable to attain and sustain a competitive advantage (Løwendahl, 2005). Choosing among the generalist or the specialist strategic orientation means deciding to allocate relatively more

[1] In Figure 3.3, Gn stands for Generalist, while Sp for Specialist

resources to the acquisition of one strategic resource instead of the other, e.g. more to hiring associates than to develop specialized knowledge, in the case of a PSF taking a generalist orientation, or vice versa, in the case of a specialist firm. In this way, one of the two reinforcing feedback loops eventually prevails on the other and as a consequence of the reinforcing character of the loops, this decision makes the firm over time more reliant on the chosen structures and processes. The dynamic behavior for a generalist PSF is presented in Figure 3.4.

Figure 3.4: Dynamic Behavior of PSFs' Resource Allocation Policy (Generalist Case)



The dynamic behavior of the feedback loop diagram portrayed in Figure 3.4, however, provides only a qualitative explanation for the evolution of a PSF into the generalist or specialist organizational form. In fact, "[c]asual loop diagrams can never be comprehensive […]. They are also never final, but always provisional" (Sterman, 2000: 166). Feedback loop diagrams can be regarded as valuable for providing qualitative explanations about the behavior of a system, by showing how variables influence each others. Nevertheless, they do not tell anything about the functional form and magnitude of such relationships. Therefore, in order to have a more accurate representation of the dynamic behavior of a system, these relations need to be defined in a more formal way. The

following sections will provide a description of the overall structure of the formalized model, define the functional forms and numerical values assigned to variables.

3.4 The Formal Model

As previously stated, the simulation model provides a representation of the organizational dynamics featuring law firms. The essential feature, which distinguishes law firms from other PSFs lies on the fact that their organizational structure builds upon two hierarchical levels, associates and partners, while most of other PSFs display a three layers structures, e.g. consultants, managers and partners, in a consulting firm.

The model takes into account four major sectors, which result from collecting into categories those variables presented in Table 3.1. it is important to highlight that these sectors all deal with internal organizational variables and no environmental factors are, at the moment, taken into account. The first sector deals with the definition of the law firm's *business strategy orientation*, i.e. generalism vs. specialism. This impacts directly on the second model sector, i.e. the *Human Resource Main Chain*. In particular, the strategic choice of a firm would primarily impact on the hiring process, which would be extremely intense for generalist law firms, while more moderate for specialists. The firm's business orientation impacts, on the other hand, on the third model sector, which is centered on catching the dynamics of these firms' stock of *Knowledge*. On the basis of the suggestions advanced in the literature, specialist law firms would feature a higher level of specialized knowledge (mostly embodied in partners) with respect to the stock of knowledge generalists would have. The final sector deals with the *Economics* of the firm and assess which are the sources of revenues can be depicted in either the generalist or the specialist law firm. After this general overview, the micro-structure of the model can be presented. The discussion is organized around the four macro-sectors identified above.

3.4.1 Business Strategy Orientation

It represents the core sector, which the model builds upon. A law firm can either choose to pursue a generalist or a specialist strategy, which essentially means either choosing to provide a wide range of legal services or focusing on few, very specific ones (Jaffee, 2001). In the former case, the standardized nature of the projects has been suggested to allow partners to delegate much of the work to associates, while in the second, partners' involvement in case resolution is usually much higher. As Maister (1993) maintains, this different posture towards the clients' marketplace leads the internal structure of these firms to be extremely different, with generalists' 'professional pyramid' having a broader base than specialists. The shape of the pyramid is defined, on the one hand, by the type of projects undertaken, as previously claimed, and by the utilization rates of the firm's professionals, on the other (Maister, 1993). The utilization rates identify the amount of time a professional spends in professional related activities, that is case resolution. In the case of partners, the lower their utilization rate is, the more time they can spend on activities like building client relationships or managing the firm (Maister, 1993; Sherer, 1995; Løwendahl, 2005). The fraction of time spent on case resolution, identifies their *billable time*. In the model, this is computed in the following way:

$$SSBT = SSUR * MAXWT \text{ [2]}, \qquad [4]$$

where *SSBT* identifies the partners' billable time, *SSUR* stands for partners' utilization rates, while *MAXWT* identifies the overall available working time. The computation of associates' billable time is based on the following equation:

$$JSBT = JSUR * MAXWT, \qquad [5]$$

[2] SS and JS will be used in the equations to identify partners (or senior staff) and associates (or junior staff), respectively

which gives the fraction of time junior staff is involved in professional activities (Maister, 1993; Sherer, 1995; Løwendahl, 2005). In equation [5], *JSBT* identifies the associates' billable time and *JSUR* stands for associates' utilization rates.

Once overall billable time has been defined, it is possible to compute the overall number of projects, which they can sustain. This is given by the overall time (s)he spend in professional activities, as identified in equation [4] and [5], over the time (s)he is actually involved in the settlement of each single case. This is formalized in equation [6], which refers to partners, and [7], which applies to associates..

$$SSPJCTs = \frac{SSBT}{SSToPJCT}, \qquad [6]$$

$$JSPJCTs = \frac{JSBT}{JSToPJCT}. \qquad [7]$$

In equation [6], *SSPJCTs* identifies the number of projects, which each partner can supervise, while *SSToPJCT* represents the time each partner spends on each single case. Similarly, in equation [7] *JSPCTs* denotes the number of projects, which an associate can be assigned to, while *JSToPJCT* is the time (s)he spends on case resolution. This last variable is computed by subtracting the time a partner spends on a case from the overall project time requirement. As a rule of thumb, the less time a partner can devote to case resolution, the more the number of projects, which (s)he can supervise. Hence, partners of generalist PSFs would be likely to be assigned to the direction of a higher proportion of projects than partners of specialists would. This rule holds also for associates, i.e. the less the time an associate spends on case settlement, the higher the number of projects, which (s)he can work on.

On the basis of the results, which equations [6] and [7] provide, it is possible to define how many associates can work under the supervision of each single partner, i.e. the firm's leverage ratio. This number is given by the following equation:

$$Leverage = \frac{SSPJCTs}{JSPJCTs}. \qquad [8]$$

This ratio ultimately defines the shape of the 'professional pyramid'. This ratio will be higher for generalists than for specialists. This occurs because, as the literature suggests, generalist PSFs' partners can delegate an extensive part of the execution of cases to associates. Therefore, the time they would spend on each of them would be limited, thus increasing the share of working time of associates. As a consequence, for generalist PSFs, the number of projects that a single partner can supervise will be higher than those directed by a specialist PSFs' partner. Hence, the numerator of equation [8] would be higher for generalist firms than for specialists. At the same time, since generalist firms' associates are more involved in case settlement, they can be appointed to fewer projects than specialist firms' associates would. This makes the denominator of equation [8] smaller for generalists than for specialists. Despite this pure mathematical deduction, the different leverage configuration can be explained by the fact that, if generalist PSFs' partners can supervise a wide number of projects and every associate can be appointed to a small number of projects, the firm would need to have many juniors working for every single partner, in order to have enough people to effectively accomplish the projects, which (s)he has been able to attract (Galanter and Palay, 1991).

3.4.2 Human Resources main chain

The HRM system is usually regarded as one of the most crucial elements in the internal organization of PSFs, since it is intended to seize the most from the core "technology" of the firm, i.e. people and their human capital (Barney and Wright, 1998; Hitt, *et al.*, 2001; Jaffee, 2001).

Associates (JS) and partners (*SS*) represent the two hierarchical tiers, which a law firm is usually structured around. In the model, these are identified as stock. The *JS* stock is defined as:

$$JS_t = \int_{t_0}^{t} [H_t - (P_t + A_t)]dt + JS_{t_0} \,, \qquad [9]$$

where H_t stands for 'hiring', i.e. the number of newly recruited associates, P_t identifies the number of associates, who gets promoted to partnership, and A_t stands for 'attrition', which defines the number of associates, who are laid off because they did not manage to attain partnership. Equation [9] shows that the level of the associates' stock at a given time *t* is given by the number of associates at time *t-1* (JS_{t0}) plus the difference between the number of newly hired associates and those who depart from that role, either for promotion or for having been laid off.

The *SS* stock is regulated by the promotion flow (P_t), which transfers professionals from the rank of associate to that of partners, and the 'retirement' flow (R_t), which identifies those partners, who leave the firm at the end of their working life. This stock is defined as follows:

$$SS_t = \int_{t_0}^{t} (P_t - R_t)dt + SS_{t_0} \qquad [10]$$

For sake of simplicity, hiring is assumed to take place only at the entry level. Moreover, it has been also assumed that a firm can immediately hire an associate when it needs it. Therefore, the 'time to hire' is implicitly assumed to be set at 1. It is therefore represented as an inflow, which connects only to the associates' stock. This flow is defined as:

$$H_t = JS\_needed_t - JS_{t-1} + HfR_{t-1}\,. \qquad [11]$$

Where HfR_{t-1} stands for 'hiring for replacement, while JS_needed_t identifies the number of associates, which the firm needs at time *t* and it is computed in the following way:

$$JS\_needed_t = SS_t * Leverage \qquad [12].$$

Equation [12] represents the link between the *HRM* and the *business orientation* macro-sectors. Given the number of partners employed in the firm, the absolute number of associates is determined

by the leverage ratio (Galanter and Palay, 1991), which was claimed to be higher for generalists than for specialists. As a consequence, the absolute number of associates they would employ would be far greater than in the case of specialist law firms. Obviously, the actual number of newly hired junior practitioners would be given by the difference between the overall number of associates needed, as defined by equation [12], and the number of professionals, who already hold a position as associate, i.e. JS_{t-1}. The last variable of equation [11], i.e. HfR_{t-1}, identifies the number of associates, which need to be hired to replace those, who left, either for promotion or because they have been laid off. These associates are recruited in addition to those hired in response to the effect of the leverage ratio. In fact, if by virtue of the associates-to-partner ratio, for any new partner in the firm a number of associates equal to the value of that ratio need to be recruited, hiring for replacement occurs to keep the number of associates at least at the same level (Galanter and Palay, 1991). A further and more detailed specification of this mechanism will be given in Chapter 6, where the dynamics of growth of law firms, applicable to the whole universe of PSFs, will be examined. The value of the *HfR* variable is defined by the intensity of the two outflows connected to the associates' stock, i.e. *Promotion* (*P*), which accounts for those associates, who manage to be promoted to partnership, and *Attrition* (*A*), who identifies the number of juniors, who leave the firm. This specification of equation [11] is consistent with Galanter and Palay (1991), who assert that hiring for replacement must take account of both those associates who get promoted and of those who get dismissed. The promotion and attrition flows are formally defined as:

$$P = JS\_to\_be\_promoted * JSPF \quad [13]$$

$$A = JS\_to\_be\_promoted * (1 - JSPF) \quad [14]$$

where:

$$JS\_to\_be\_promoted = \frac{JS}{JS\,average\,tenure} \quad [15]$$

and *JSPF* stands for *Junior Staff Promotion Fraction*, i.e. the percentage of associates, who manage to be promoted to partnership. The functioning of these two flows is governed by the "up-or-out" promotion system, according to which if an associate cannot achieve partnership is out-placed (Galanter and Palay, 1991: Maister, 1993; Sherer, 1995; Morris and Pinnington, 1998), and which makes them be regarded as complementary. The promotion flow is a 'transition' flow that transfers employees from the associates' stock to the partners' one. For this last, the only connected outflow is *Retirement* (R_t), which is defined as:

$$R_t = SS_{t-1} / SS\_average\_tenure \quad [16]$$

3.4.3 Knowledge

Knowledge has often been regarded as a crucial resource, thanks to which firms can attain and sustain superior performance (Grant, 1996; Spender, 1996). This appears to be especially true in the domain of PSFs. For such organizations knowledge represents not only an "input of the production process", as in the case of manufacturing firms, but it is essentially what they supply to customers (Morris and Empson, 1998; Løwendahl, *et al.*, 2001). It is therefore on the basis of the stock of accumulated knowledge that a PSF primarily fosters its productivity (Nachum, 1999) and, consequentially, its profitability (Hitt, *et al*., 2001). In the model, the stock of knowledge is defined as:

$$K_t = \int_{t_0}^{t} (K_t^+ - K_t^-)dt + K_{t_0} \ , \quad [17]$$

with K^+ representing the inflow that accrues it and K^- the associated outflow. In general, a firm's overall stock of knowledge can be regarded as stemming from the interaction of both explicit and tacit knowledge (Grant, 1996; Spender, 1996; Hansen, *et al.* 1999). The former, which Grant (1996) defines as *know what*, can be easily codified and transferred (Hitt, *et al.* 2001), it is gained through formal education, and it is assumed to allow the execution of standardized, every-day tasks (Hansen,

et al. 1999). The second, identifiable as *know how* (Grant, 1996), is a blend of accumulated experience and skills, difficult to articulate and thus to transfer. Maister (1993) regards tacit knowledge as integral to professional skills. Thanks to this *know how* a firm can "provide creative, analytically rigorous advice on high-level […] problems" (Hansen, *et al.*, 1999: 109), thus creating value to clients, on the one hand, and to the owners of the firm, on the other (Løwendahl, *et al.*, 2001).

This distinction between explicit and tacit knowledge is directly mirrored in the organizational structure of PSFs and of law firms in particular. The former typically features associates, "who are acquiring knowledge and performing work for partners" (Sherer, 1995: 671), while tacit knowledge is embedded in partners, who "are the source or repository of firm knowledge" (Sherer, 1995: 671). The level of explicit knowledge in a law firm can be assumed to be uniformly distributed among all associates (Galanter and Palay, 1991) and can be directly identified by the trend the stock of associates follows. The level of tacit knowledge in a law firm, instead, cannot be directly linked to the number of partners. It can be gained only through "learning by doing", which is a process that might profoundly differ among individuals. Commentators and practitioners in the filed of PSFs all agree that "learning through project work [is] by far the most important source of knowledge development" (Fosstenløkken, *et al.*, 2003: 868). As a consequence, it is assumed that the more time a partner spends on case resolution, the more and the faster (s)he will fill the (tacit) knowledge stock. The inflow connected to the knowledge stock is therefore defined as:

$$K_t^+ = SS * (SSToPJCT * MaxK^+), \qquad [18]$$

where *SS* is the overall number of partners in the law firm, *SSToPJCT* (*Senior Staff Time on Project*) is the time each partner spends on project, as introduced in equation [6], and $MaxK^+$ is a multiplier assessing the contribution the time partners spend on projects to the increase in the level of the knowledge stock. Since no empirical or theoretical indications have been advanced on the functional

form of the possible influence of the time spent on project over the overall increase of the stock of knowledge, for sake of simplicity this relationship has been assumed as linear. This equation represents the connection between the *Knowledge* macro-sector and both the *Business orientation* and *HRM* ones.

The value-creating nature of knowledge, both towards clients and towards the firm itself, cannot be regarded as being everlasting. "The earning capacity of firm-specific knowledge erodes over time, both because it begins to lose its specificity and because improved methods and techniques become available, making this knowledge obsolete" (Nachum, 1999: 930). Equation [16] catches this dynamic 'depreciation' of knowledge in the following way:

$$K_t^- = K_{t-1} * K\_loss\_rate \ , \qquad [19]$$

where K_{t-1} represents the level of the knowledge stock at time *t-1*, while *K_loss_rate* is the speed at which this stock loses value.

3.4.4 Economics

In this last sector, the law firms' revenues and costs are assessed. Revenues for a law firm are defined by the fees applied by associates and partners. If we follow Maister (1993), fees can be defined in the following way:

$$JS\_total\_fees = JSBT * JS\_billing\_rate \qquad [20]$$

$$SS\_total\_fees = SSBT * SS\_actual\_billing\_rate \qquad [21]$$

where *JSBT* and *SSBT* were defined in equations [4] and [5]. *JS_billing_rate* is assumed to be market-based and is therefore kept constant. *SS_actual_billing_rate* is instead defined as:

$$SS\_actual\_billing\_rate = SS\_billing\_rate * (1 + EoKoSSBR) \qquad [22]$$

where *EoKoSSBR* stands for *Effect of Knowledge on Senior Staff Billing Rate*, and represents the service delivery premium price, which a law firm can benefit from. Although the influence the stock of knowledge has on the billing strategy of PSFs has been empirically detected (Sherer, 1995), the functional form of this relationship has not however been specified and therefore needs to be inferred from the indications, which the theory provides. Drawing upon the contribution of Nachum (1999), who detected a positive, linearly increasing relationship between the accumulated stock of knowledge and PSFs' productivity, the *Effect of Knowledge on Senior Staff Billing Rate* was defined as portrayed in Figure 3.5.

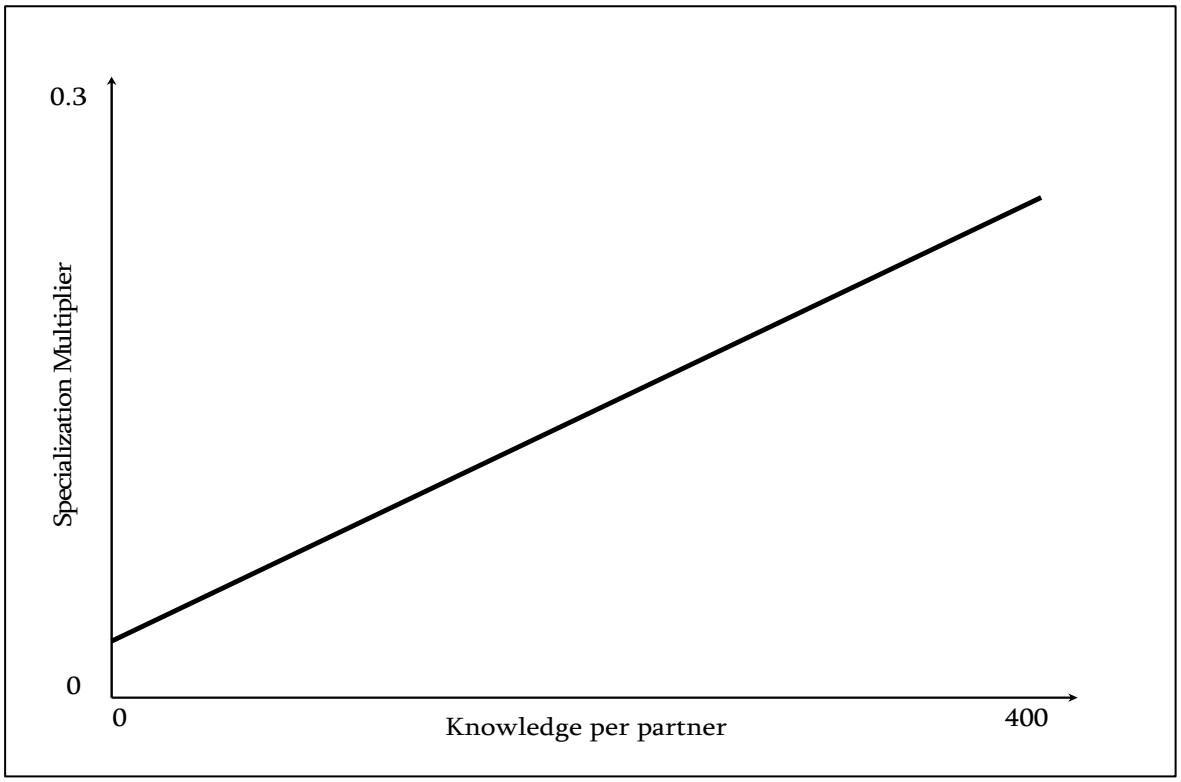


Figure 3.5: Effect of Knowledge on Partners' Billing Rate

The main costs law firms incur into are linked, on the one side, to the salaries paid to associates and, on the other, to overheads (Maister, 1993). The first were defined in accordance with the "one-to-four" convention (Brill, 1982), according to which an associate's salary amounts to one quarter of the hours they bill out. Formally:

$$JS\_salary = JS\_fixed\_salary + (JS\_fees / 4). \quad [23]$$

In the second, a fixed per-professional overhead cost includes the costs for secretaries, for administrative staff, space, suppliers, etc., was assumed. Hence:

$$Total\_overhead = Total\_headcount * Overead\_cost\_per\_attorney. \quad [24]$$

3.5 Parameters settings

On the basis of the functional forms of the relationships among the variables structuring a given system, one can define how they influence each other and how such influences shape the system's behavior over time. However, in order to allow the operation of the model, numerical values to all parameters need to be assigned and initial conditions of state variables defined. It is in fact on the basis of the numerical values, which the modeler assigns to auxiliary variables, that the model can attain consistency with real world observations or it is by assessing the outcomes the simulation produces in response to variations in values that the modeler can conduct her/his experiments (Hanneman, *et al.*, 1995; Davis, *et al.*, 2007; Harrison and Carroll, 2006; Harrison, *et al.*, 2007). This is a crucial step for conducting simulation-based experiments, also because "computational model specifies how the system changes from time *t* to time *t+1*, but not the state of the system at time 0, so initial conditions must be specified" (Harrison and Carroll, 2006: 31). This exercise appears to be particularly worthy when SD methods are employed. In fact, among the many research purposes that can be attained with the SD simulation approach, one of the most important is allowing the investigation of the impact, which different initial model's conditions have on the evolution of the system (Davis, *et al.*, 2005).

This attribute of the SD simulation approach appears to be particularly worthy in this case. Being the central aim of this dissertation the assessment of the role internal organizational processes have on the evolution of either the generalist or the specialist organizational form in the domain of PSFs. These two types of firms rely upon different organizational structures and processes, as was shown in Chapter 1 and summarized in Table 3.1 of this chapter. Such differences, however, all stem from their different business orientation, i.e. the key element, which influences the behavior of the overall model. As Maister (1993) maintains "the most significant variable to be disclosed […] is the choice of the mix of projects undertaken, and the implications this has for the (average) project team (i.e., leverage) structure. […] this latter variable is a significant force in influencing the economics of the firm, its organizational structure, and its positioning in the client and people markets." (p. 18). Therefore, in order to catch the differences in the structural and organizational arrangements of these two types of firms, one should assign different initial values to the parameters of the functions shaping their business orientation, in particular the utilization rates of equations [4] and [5] and the time, which associates and partners respectively spend on each projects in equations [6] and [7].

In order to assign numerical values to parameters and initiate state variables, one should either rely upon historical figures or on prior theoretical contributions (Larsen and Lomi, 2002). As previously maintained, historical data on the evolution of PSFs organizational forms are fragmented, especially in the case of specialist ones (Malhotra, *et al.,* 2006; Løwendahl, 2005). Therefore, as in the case of the definition of the functional form of the relationship among variables, model initialization and calibration should refer to and be consistent with theoretical propositions (Sterman, 1984; Barlas and Carpenter, 1990; Barlas, 1996; Larsen and Lomi, 2002). Table 3.2 provides the whole list of parameters' value and the initial values of stocks, which are kept equal both when the simulation is run for a generalist and for a specialist law firm.

Sector	Variable	Type of variable	Value
BO	Average number of hours per project	Constant	100
HR	Junior Staff (JS)	Initial value	*Leverage*
HR	Senior Staff (SS)	Initial value	1
HR	JS average tenure	Constant	7
HR	JS promotion percentage	Constant	0.5
HR	SS average tenure	Constant	30
Knowledge	Knowledge	Initial value	*SSToPJCT*
Knowledge	Maximum knowledge increase	Constant	1
Knowledge	Knowledge loss rate	Constant	0.2
Accounting	JS billing rate	Constant	150
Accounting	SS billing rate	Constant	250
Accounting	JS fixed salary	Constant	10000
Accounting	Overhead cost per attorney	Constant	30000

Table 3.2: Parameters' and Stocks' initial values constant across the models

Table 3.3, instead, records the changes in the initial values of the associates' and partners' utilization rates of equations [4] and [5], and of the time, which they spend on case resolution in equations [6] and [7], i.e. those functions shaping the generalist and specialist PSFs' business orientation.

	Generalist	**Specialist**
Variable	*Value*	*Value*
Partners' utilization rate	40%	80%
Partners' time on project	30 (hours)	70 hours
Associates utilization rate	70%	45%
Associates' time on project	70 (hours)	30 (hours)

Table 3.3: Parameters' values varying from generalism and specialism

According to this table, in the case of generalist law firms, partners are assumed to spend only a limited amount of their overall time on professional-related activities. Senior staff utilization rate is in fact set to 40% of the available working time, which is set to 350 hours per month per attorney, the remaining share of time being spent in administrative tasks and in building client relations. Moreover, the standardized nature of the engagements, which these firms take up, allows partners to devote a small proportion of such billable time to effectively settle each single case. If in fact the average time requirement of a project is here set to 100 hours, senior staff time on project in a generalist law firm is here set to 30 hours. The remaining 70 hours are delegated to associates. These are also in general more involved in professional activities, as showed by their high utilization rate, which is set to 70% of their overall available time. For specialists, instead, the involvement of partners in professional tasks is far higher, with a senior staff utilization rate equal to 80% of the total available time, as well as the time they spend solving each single case, which is 70 hours out of the 100, which an average project requires. As extensively claimed, this is due to the high idiosyncrasy of the cases specialist firms take up, which inhibit delegation to associates. These show in fact a lower time share devoted in general to professional tasks (Junior Staff Utilization Rate = 45%), the remaining time share being devoted to non-professional activities like training, and only 30 hours spent on single cases' resolution.

The simulation results concerning the dynamic behavior of generalist and specialist law firms were run with Powersim Constructor, Version 2.51. For each of the two cases, I initiate the simulation assuming that only one partner was employed in the firm. The simulation's time span was set to 70 years. After having assessed the insensibility of the model to differences in the integration method, the simulations were conducted using a fourth-order Ruhnge-Kutta integration method with a fixed step, with a simulation time step equal to 0.125.

3.6 Summary

This chapter described the simulation model developed to represent the internal organizational dynamics featuring the generalist and the specialist PSFs. On the basis of a textual analysis conducted on the main theoretical contributions on the internal organization and strategic management of PSFs, the key organizational variables that feature these alternative organizational forms have been detected. The next step was the identification of the web of causal relationships among such constructs, which allowed portraying the processes fostering the evolution of either the generalist or specialist forms in the domain of PSFs in terms of feedback loop diagrams. This feedback loop model represents the basic structure, which the hypotheses of the following chapters will be based upon. In order to test such hypotheses, the feedback loop diagram has been translated in a formal model, defined around four major sectors, representing the core elements, which the internal organization of PSFs is based upon. The following chapters apply this model to investigate and provide answers to the research questions, which this dissertation aims to provide an answer to, as advanced in the introduction.

Chapter 4
Model Behavior And Validation

4.1 Introduction

The chapters presented thus far have provided the theoretical and methodological foundations of this dissertation, along with a description of the simulation model developed to attain this study's research aims, presented in the introduction. This chapter examines instead the model's behavior in simulation. The purpose of this chapter is twofold. On the one side, it aims at assessing the validity of the model, which is an exercise that typically occurs right after a model has been created and before the analysis of the results, which it produces (Barlas, 1996). Only by assessing the validity of the model it is possible to rely upon its results. Thanks to this exercise and once having assessed the reliability of the model's outcomes, this chapter also attempts to provide an answer to the first of the research questions, which this dissertation aims at answering, i.e. *How do organizations become specialist or generalist?*

The chapter will be organized as follows. First, some reflections about what model validity and model validation in simulation are will be advanced, with a special concern devoted to SD models. This will provide the criterion, which the validity of the model here developed will be tested against. Once having assessed the reliability of such results, they will be analyzed in the light of the theoretical suggestions proposed in Chapter 1.

4.2 Model Validity and Model Validation: Epistemological and Technical Issues

"Model validation is an important, yet controversial aspect of any model-based methodology in general, and system dynamics in particular. Validity of the results in a model-based study are crucially dependent on the validity of the model" (Barlas, 1996: 183). By validation one identifies "the process of establishing confidence in the soundness and usefulness of a model" (Forrester and Senge,

1980: 210). In the main, a model can be regarded as being valid when it conceivably reproduces behaviors empirically observed in real systems. Moreover, in those cases where a model is developed for policy analysis reasons, model validity rests also on the ability of the modeler's trust in the results to be transferred to the target audience.

As many authors have highlighted, however, the lack of use of formal measures and techniques to increase the confidence in the reliability of the results produced by a simulation model has often put the validity of such models, especially SD ones, in doubt (Forrester and Senge, 1980; Sterman, 1984; Barlas and Carpenter, 1990; Barlas, 1996). Although a wide array of tests has been developed to assess the 'goodness-of-fit' of models (cfr. Forreseter and Senge, 1980), the debate on how to appraise their validity has emphasized that:

> "1. There can be no absolute test of validity,
>
> 2. There can be no objective test of validity,
>
> 3. There can be no single test of validity." (Sterman, 1984: 51).

At the roots of these points is a suggestion advanced by Forrester (1961), whereby "[t]he validity (or significance) of a model should be judged by its suitability for a particular purpose. A model is sound and defendable if it accomplishes what is expected of it […] validity, as an abstract concept divorced from purpose, has no useful meaning" (p. 115). This consequentially led to emphasize the non-technical, informal, qualitative nature of the model-validation process.

The model validity process can be distinguished between those referring to 'causal-descriptive' and 'correlational' models (Barlas, 1996). In this last case, the structure of the model does not reveal any causality among constructs, and validity of such models rests on the fit between the results, which they produce, and real world observations. In the first case, instead, the 'goodness of fit' between the model's output and empirical observed behaviors cannot be thoroughly satisfactory.

What is important is to assess the validity of the model's structure. This means that the model should not only be able to reproduce real world behavior, but it should be able to clarify what generates it and possibly how to produce different outcomes. SD models join this category. As Barlas and Carpenter (1990) and Barlas (1996) suggest, this distinction directly mirrors the epistemological debate about the assessment of models' reliability, with the reductionist/logical positivist school, on the one hand, and the relativistic/holistic view of science, on the other. The former tends to regard a model as correct or incorrect in its ability to objectively represent empirical facts, while the latter conceives a valid model as one of the possible representation of a real behavior, which is subjected to the modeler's subjective perception of the world. On the basis of the 'purpose adequacy' of models suggested by Forrester (1961) and subjective character of SD models components (Barlas, 1996), one can reasonably see validity of such models as mainly centered on assessing the soundness of their structure, which cannot show an absolute objective and formal character.

To assess the structural validity of a model, one can rely upon a number of tests (see Forrester and Senge, 1980 for a complete review). According to Barlas (1996), the process of model validation initiates with tests about model structure. These assess the soundness of the arrangement of the model, in terms of constructs, relationships and parameters, in a direct way, i.e. without analyzing the relationship between the structure and the behavior produced. In order to conduct these tests, constructs, causal relationships and parameters are evaluated against standards, which can be drawn both from empirical or theoretical suggestions. This would mean, for instance, that the functional forms of the equations, which the model builds upon, are valued in connection to empirically observed or theoretically suggested relationships or that parameters are set consistently with real world observations or with theoretical knowledge about real systems. Once the structure of a system has been directly assessed, one can further appraise it, in an indirect way, against the behavioral outcomes produced. Thanks to these tests, one can measure the model's ability to generate given behaviors or identify those parameters, which the model is especially sensitive to and then find a

correspondence in real world systems. As a result, thanks to such 'structure-oriented behavior tests', one can not only define the theoretical or empirical consistency of the system structure, but also verify whether it produces empirically or theoretically reliable results. Finally, one can conduct tests to measure the soundness of results themselves, always with reference to empirical observations, with a strong emphasis on the behavioral patterns produced, rather than on single events evaluations (Barlas, 1996). It is once more worthwhile pointing out that none of such tests has absolute value in themselves, but their relevance is constrained by the purpose, which the model has been built for (Forrester, 1961; Sterman, 1984).

Finally, it is worthwhile explaining why classical statistical significance tests would not be an amenable tool to validate simulation models. The first rationale is philosophical and rests on the very core nature of simulation models. As previously maintained, such models belong to a philosophical school, which conceive them as on of the various possible representations of real world behaviors, subject to the modeler's perceptions, hence with no stringent 'true or false' character. As a consequence, one cannot straightforwardly define an absolute 'level of significance' of the results, which these models produce. The technical grounds, which make the employment of statistical significance testing limited, are related to the assumptions, which that must hold in order to allow its application, i.e. the independence, the non cross-correlation and normally distributed. These assumptions, in particular the first two, are almost never encountered in SD models, since variables are autocorrelated and cross-correlated as a result of the feedback loop structure at the roots of such models. This therefore prevents pure statistical significance testing to be applied in the validation process of SD models.

In the next section, these general considerations will be applied to the simulation model here presented, in order to assess its validity, both in structural and in behavioral terms.

4.3 Validating the Model

As it was claimed in the previous section, which the process of validation of a SD model requires three steps: tests of model structure, structure-oriented behavior tests and behavior pattern tests (Forrester and Senge, 1980; Barlas, 1996). The first validation step has been already taken in Chapter 3, i.e. when the formal model has been presented. Starting from the basic feedback loop representation of the model, any single variable and any single connection between them was detected and defined in strict accordance to theoretical propositions drawn from empirical observations, as reported in Table 3.1. Even the functional forms and parameters employed are rooted in real world relationship. For instance, the time associates are assumed to spend before being eligible for promotion (or either attrition) is set at 7 years in the model, which is an average of the associates' tenure time, which Galanter and Palay (1991) observed and reported in their study (p. 63). The same holds, for instance, for the calculation of associates' salaries, which was defined according the 'one-to-four' convention, which Brill (1982) observed in his survey about law firms' practices. Another example can be found in the definition of the promotion process, which was set in accordance to the 'up-or-out' rule, according to which if an associate does not manage to achieve partnership, (s)he get dismissed from the firm and which is identified in the model by equations [13] and [14].

With the first step of the validation process already been tackled, it is now necessary to estimate the reliability of the behavioral patterns, which it produces, in order to gain a complete and satisfactory appraisal of the validity of this model. For sake of consistency, such analysis will be conducted with reference to the four model sectors.

4.3.1 Business Strategy Orientation

This part of the model dealt essentially with two variables: the number of projects these two types of firms can effectively take up, and the number of associates, which each partner can effectively sustain, which defines the company's leverage ratio (Maister, 1993). Theoretical propositions about

the share of projects, which generalist or specialist PSFs can take up, hold that the firsts "would tend to be focused around a core of high volume clients" (Maister, 1993: 26), while specialists' "clients represent only a small proportion of the aggregate fees spent in any given practice area (Maister, 1993: 21). Following Galanter and Palay (1991), the number of projects, which partners are able to attract represent the number of projects, which the law firm actually attracts, which then define how many projects any single associate can be appointed to. As claimed in Chapter 3, the number of projects partners can take up is defined by the time, which they devote in professional-related activities, identified as 'utilization rate' over the time, which they spend in settling each single case, as formalized in equation [6]. According to this formalization, the generalist partners' utilization rate is far lower than for specialist partners, and being a generalist partner less involved in the resolution of each case, the number of projects, which (s)he can take up and effectively supervise, is higher than those that specialist partners would be able to undertake. On the basis of these assumptions, the model produces results whereby the volume of projects undertaken by generalists is far higher than for specialists (6.8 projects per partner in generalist firm vs. 4.0 for each specialist partner). This directly connects to the theoretical suggestion whereby generalist PSFs "would tend to be focused around a core of high volume clients" (Maister, 1993: 26), while specialists' "clients represent only a small proportion of the aggregate fees spent in any given practice area (Maister, 1993: 21). Such result can therefore be regarded as reliable.

Given the possibility to delegate part of their accomplishment to less experienced, skilled practitioners, the wider is the number of projects a partner can take up, and the stronger the need to appoint associates for case resolution. This is well explained by Galanter and Palay (1991), who claim that "[t]he number of associates per partner that a firm can hire depends upon two factors: the monitoring resources of the firm and the amount of human capital each partner in the firm possesses. […] the bigger each partners' reputation, the more secure and broader her client relations, and the more valuable are her experience-dependent skills, the more associates she can

sustain. In addition, the more human capital the firm has, the more resources per partner the firm can afford to spend on monitoring associates and, again, the more associates it can hire." (p. 150). Equation [7] catches this organizational pattern, by relating the utilization rate of associates to the time they spend on each single case. Being the utilization rate and the time spent on projects of generalist associates higher than for specialist associates, equation [7] leads specialist associates to be assigned to a wider number of projects, than generalist associate would. This consequently impacts on the leverage ratio of these two typologies of firms, with generalist PSF featuring a higher leverage than specialist ones. The definition of the leverage structure is given by equation [8]. As we can see in Figure 4.1a and 4.1b, on the basis of the model's assumptions, the outcomes do present a situation whereby the leverage ratio of generalist is higher than the leverage of specialist, which is consistent with many theoretical suggestions (Galanter and Palay, 1991; Maister, 1993; Sherer, 1995; Jaffee, 2001) and as reported in Table 3.1. This further contributes to build confidence in the reliability of the model and of its results.

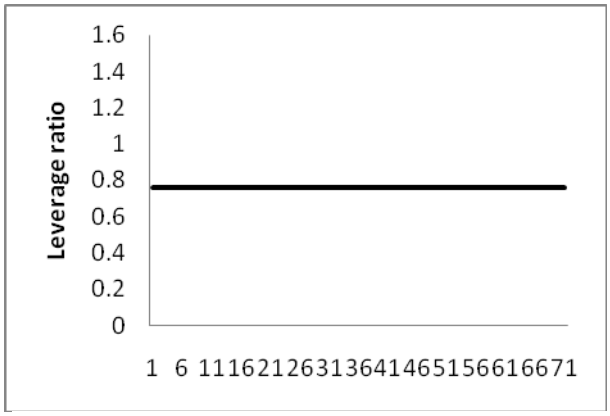


Figure 4.1a: Leverage ratio (generalist)

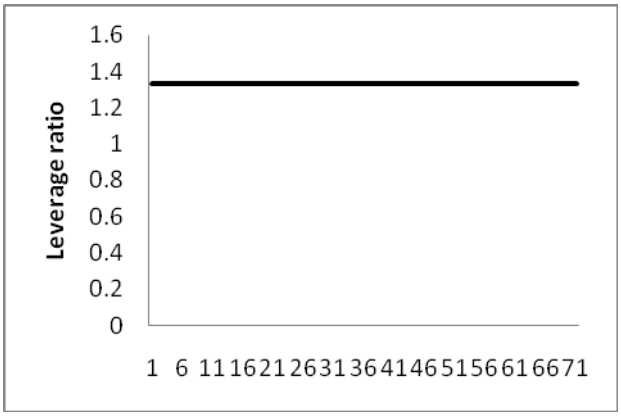


Figure 4.1b: Leverage ratio (specialist)

4.3.2 HR Main Chain

This sector of the model deals with the definition of the demographic structure of generalist and specialist law firms. The two crucial flows that allow the demographic structure of the firm being effectively outlined are 'hiring' and 'promotions' (along with its complementary flow, i.e. 'attrition'). According to the literature, given the higher leverage structure featuring generalist PSFs, they would

need to recruit a larger number of associates than specialist PSFs would (Galanter and Palay, 1991; Maister, 1993. cfr. Table 3.1). As we can see in Figures 4.2a and 4.2b, the model produces results that are consistent with the theory.

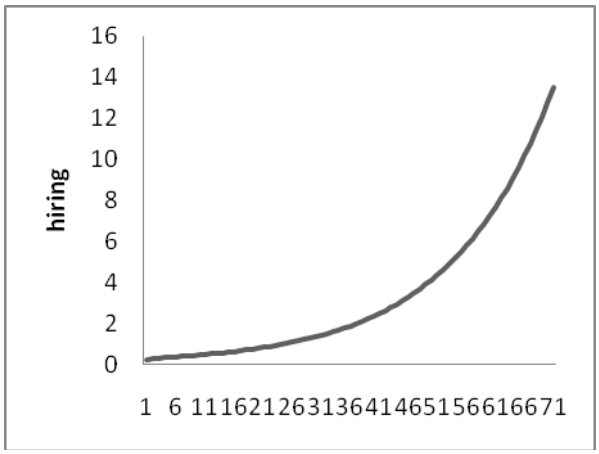


Figure 4.2a: Hiring (generalist)

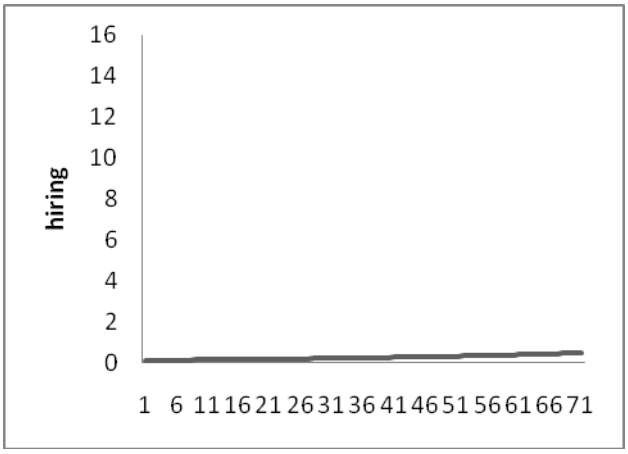


Figure 4.2b: Hiring (specialist)

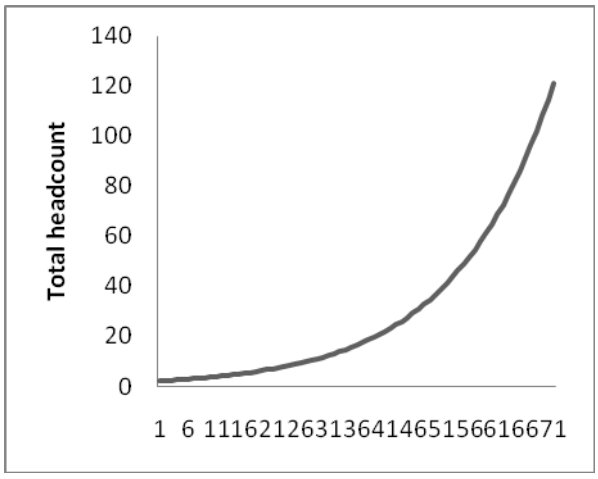


Figure 4.3a: Total headcount (generalist)

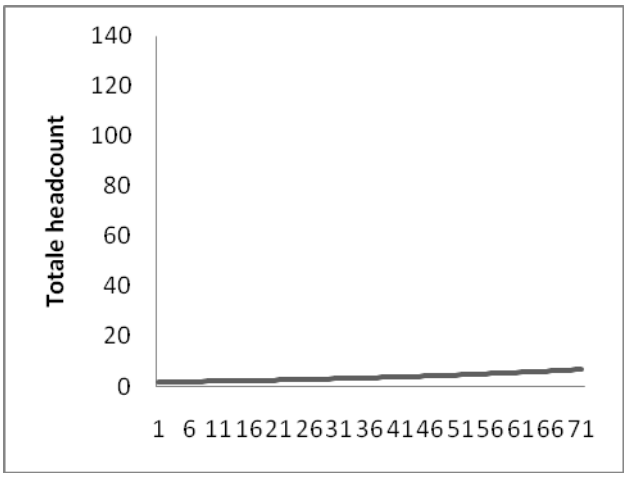


Figure 4.3b: Total headcount (specialist)

These results, together with the behavior of the total number of attorneys employed in the firm (Figures 4.3a and 4.3b), show another important aspect, which contributes to assess the validity of the model. The 'hiring' and the 'total headcount' curves for the generalist firm show a marked exponential trend, while for the specialist firm, this growth is not very distinct. Theoretical propositions want this exponential growth of big, generalist PSFs to be triggered by the 'up-or-out' rule, which governs the process of promotion and that Galanter and Palay (1991) name "the

Promotion-to-Partner Tournament". A more detailed explanation of this mechanism and of the consequences on the growth patterns of these firms will be provided in Chapter 6. The very core idea of this process, however, is that for a given, pre-arranged period of time, associates would be given a salary to perform activities for partners and during which they get trained. At the end of this period, a given percentage of these associates will be awarded partnership. Losers will be out-placed. By promoting associates, a law firm accrues the stock of partners. Since the leverage ratios must always remain constant to avoid profitability problems (Maister, 1993), by enlarging the number of partners employed, the number of associates needs to expand, as well. For any new partner, a number of associates equal to the number of *Junior_needed* (equation [12]) must be hired. Moreover, still to avoid the leverage ratio to change, the firm must also hire a number of new associates, who will replace those who did not win the tournament and have been made redundant. The exponential growth of hiring and of the total headcount is therefore "a by-product of the promotion-to-partner tournament, [which] depends upon [the] argument that each firm's promotion percentage remains reasonably constant and the ratio of associates to partners either remains constant" (Galanter and Palay, 1991: 102-103). On the basis of the same piece of reasoning, one can also explains the moderate growth of specialist firms. Since the leverage ratio and the general number of attorneys employed are far lower than the generalist's, at each round the firm would not need to recruit as many associates as a generalist law firm does. Moreover, the intensity of the promotion and attrition flows will be relatively small, thus reducing, on the one hand, the number of associates awarded with partnership at each round of the tournament, thus reducing the need of new associate to support them, and the number of 'hiring for replacement', on the other. Galanter and Palay (1991) provide empirical evidence for this marked exponential growth featuring generalist law firms, or "the big law firm", as they identify them. Their results are reported in the Appendix of the dissertation and they do mirror the same growth pattern, which the model here developed produced. At the same time, although the authors did not provide any empirical evidence about the growth dynamic featuring

specialized law firms, they suggest that they "remain small simply because they have no surplus, shareable human capital. […] Some attorneys have substantial human capital, even surplus human capital, that they cannot share. […] Because their human capital is so highly idiosyncratic, however, they cannot effectively lend it to others. […] Thus while she can use other lawyers and investigators to prepare aspect of her cases, clients will generally insist upon her presence at important depositions, negotiations, trials, and the like." (Galanter and Palay, 1991: 109).

4.3.3 Knowledge

Knowledge represents the core resource, which PSFs rely upon to perform their activities. Such firms need therefore to effectively foster its development, if they want to attain and sustain a competitive advantage. The impact of knowledge has on the profitability of the generalist and of the specialist PSF, however, was suggested to be profoundly different. According to Hansen, *et al.* (1999), companies can take two different approaches to manage their knowledge: the *codification strategy*, on the one hand, and the *personalization strategy*, on the other. The former is pursued by companies that "[p]rovide high-quality, reliable, and fast information-systems implementation by reusing codified knowledge" (Hansen, *et al.* 1999: 109), while the second features companies that "[p]rovide creative, analytically rigorous advice on high-level strategic problems by channeling individual expertise" (Hansen, *et al.* 1999: 109). This distinction closely mirrors the difference between the generalist and the specialist PSF (see Table 3.1 – 'Type of client'). Concisely, by pursuing the *codification strategy*, the level of the overall stock of knowledge a company can develop is in general higher than the stock of knowledge of companies following a *personalization strategy* (Hansen, *et al*. 1999). As the authors suggest, this occurs because, within the *codification strategy*, "[k]nowledge is codified using a 'people-to-document' approach: it is extracted from the person who developed it, made it independent of that person, and reused for various purposes. […] That opens up the possibility of achieving scale in knowledge reuse and thus growing the business." (Hansen, *et al.*, 1999: 108). On the other hand, under the *personalization strategy*, people "focus on dialogue

between individuals, not knowledge objects in database." (Hansen, *et al.*, 1999: 108). This trend is effectively reproduced in Figures 4.4a and 4.4b.

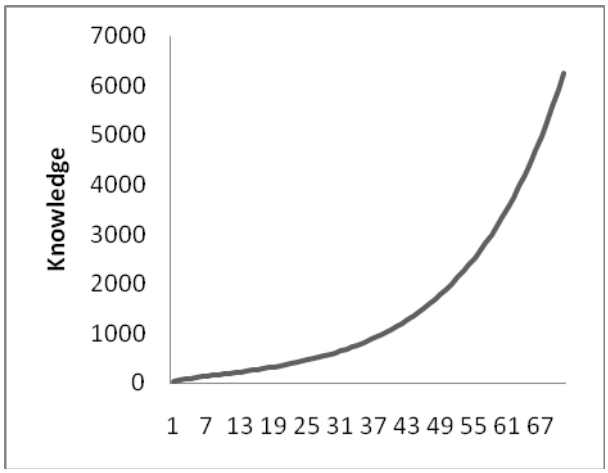


Figure 4.4a: Knowledge stock (generalist)

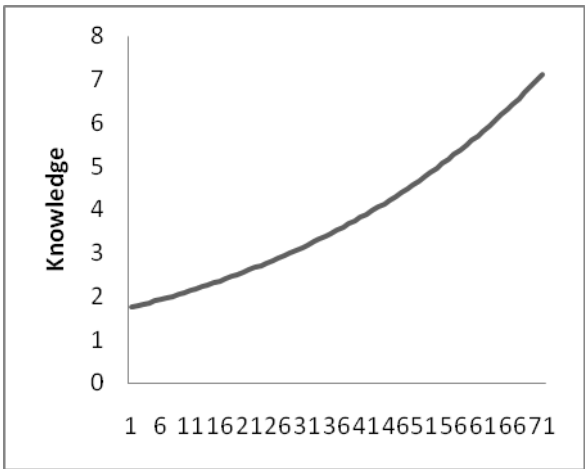


Figure 4.4b: Knowledge stock (specialist)

However, the fund of knowledge, especially of tacit one, each single individual has in a company employing the *personalization strategy* is more elevated than in the former and it is to a great extent embodied in senior staff, since practitioners "arrive at a deeper insight by going back and forth on problems they need to solve" (Hansen, *et al.*, 1999: 108). Even in this case, it is possible to find a direct connection between the results of the simulation model and prior theoretical predictions (Figure 4.5a and 4.5b).

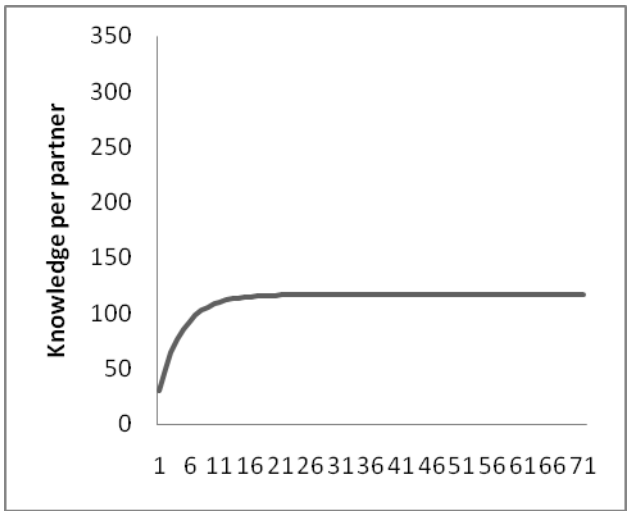


Figure 4.5a: Knowledge per partner (generalist)

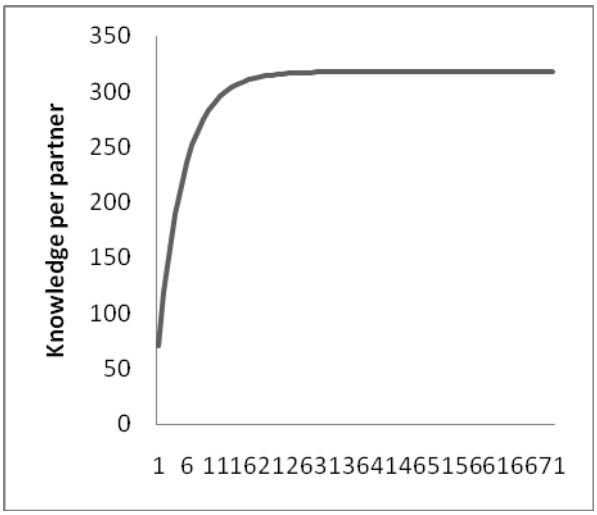


Figure 4.5b: Knowledge per partner (specialist)

4.3.4 Economics

This sector of the model deals with the assessment of law firms' revenues and costs, on the basis of which the profitability of these firms can be computed. This part of the model is profoundly influenced by business orientation. As Maister (1993) maintains, for highly-leveraged firms, as generalist PSFs are, "a significant portion of partnership profits derives from the surplus generated from hiring staff at a given salary and billing them out at multiples of that salary" (p. 8). This is directly mirrored in the model, which shows that the revenues generated by associates exceed those of partners (Figure 4.6a). Despite their low billing rates, in fact, associates spend more time on case resolution, hence increasing the overall amount of billable hours, compared to those partners bill out. However, the trend shown in Figure 4.6a also arises because partners cannot benefit from any major increase of their billing rates over market standards, as shown in Figure 4.7a, since the fund of knowledge each partner has is fairly low (Figure 4.5a).

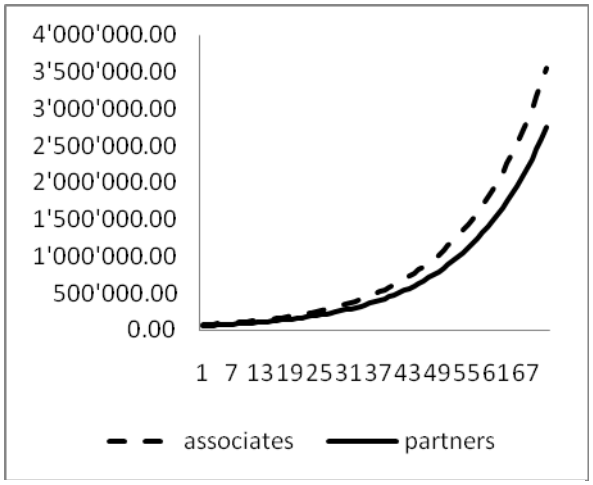


Figure 4.6a: Sources of Revenues (generalist)

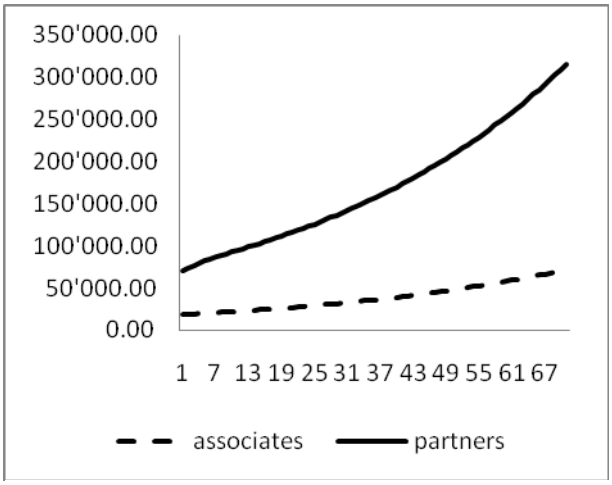


Figure 4.6b: Sources of Revenues (specialist)

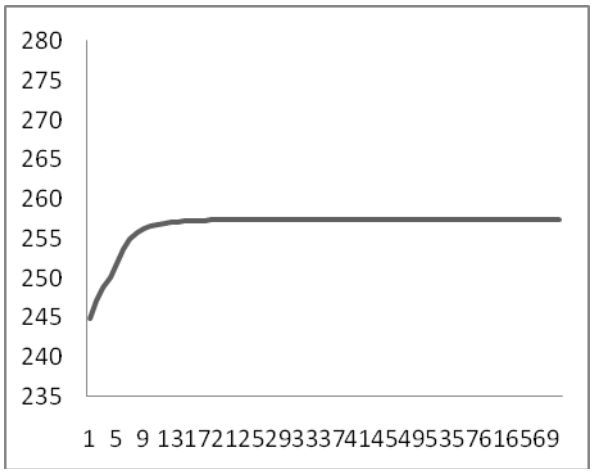


Figure 4.7a: Partners' billing rates (generalist)

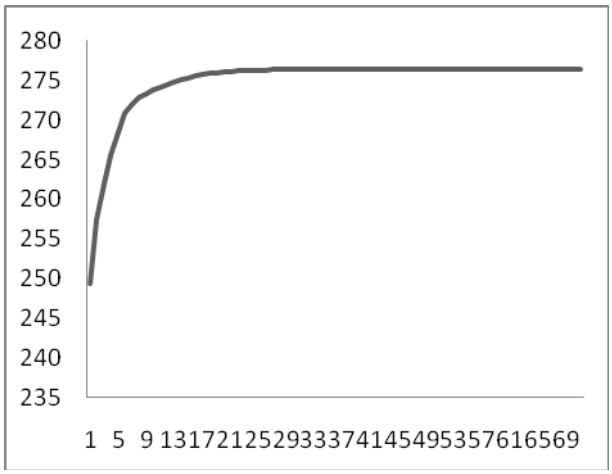


Figure 4.7b: Partners' billing rates (specialist)

For low-leveraged firms the main source of profitability comes from the high involvement of senior staff in case resolution. In this case, the curve of senior staff's fees exceeds those of junior staff's fees (Figure 4.6b). This occurrence is mainly driven by the fact that, thanks to the ability of partners of specialized law firms to foster the development of knowledge, they can benefit from a sharp increase of their billing rates over market standards (Figure 4.7b), given that the knowledge per partner is markedly high (Figure 4.5b). These model results do find once again a close connection with suggestions advanced in the literature, according to which specialized partners "cannot lend [their] presence to associates and therefore cannot share [their] human capital. Instead [they] attempt to increase the return on [their] capital through selectivity in taking cases. Of course, [their] success at increasing [their] income in this manner depends upon [their] ability to set [their] own price by differentiating [their] services from those of other practitioners." (Galanter and Palay, 1991: 110).

Such results, along with those previously presented, show that this model does provide a reliable representation of how these two types of firms can arrange their internal processes in order to foster their profitability, which is here measured as the 'profit per partner ratio' (Samuelson and Jaffe, 1990; Maister, 1993) and reported in Figures 4.8a and 4.8b.

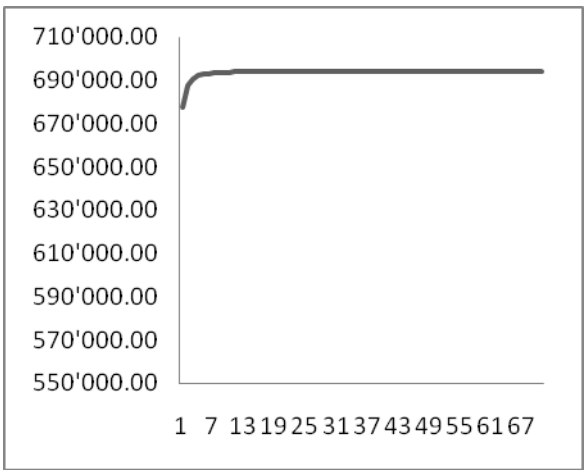


Figure 4.8a: Profit per partner (generalist)

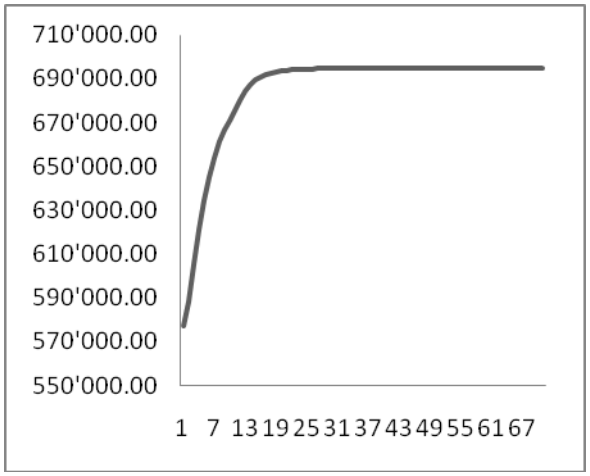


Figure 4.8b: Profit per partner (specialist)

4.4 How do organizations become specialist or generalist?

Having assessed the validity of the simulation model developed in this research, it is now possible to employ its results in the light of the research purposes of this dissertation. The baseline results presented can effectively be employed to answer the first research question, which was presented in the introductory part, i.e. *how do organizations become specialist or generalist?*

As suggested in Chapter 1 the generalist and the specialist PSF do feature an acute dissimilarity in the way they arrange their internal processes. In fact, although their structural configuration might be similar, since they both display a hierarchical organizational structure arranged around two levels (associates and partners) or they both employ an 'up-or-out' promotion system, they do differ in the way the processes that govern the operation of such structures function. As showed in the feedback diagram representation presented in Figure 3.3, in response to the decision of targeting a wide array of clients with fairly familiar cases as opposed to clients with highly technical matters, a PSF needs to set up a system of internal organizational processes allowing the effective acquisition and deployment of a key strategic resource, i.e. associates, for generalist firms, and specialized knowledge, for specialists.

The main organizational trait, these firms need to attentively monitor is the human asset leverage, which although at different levels depending on the nature of the strategic posture

undertaken by these firms (generalism vs. specialism), needs to remain constant to allow both the firms to foster their profitability. More specifically, the model does show that in response to the different strategic posture undertaken by a firm, such internal organizational processes behave in a profoundly different fashion. In the case of generalist firms, the HR main chain operates at maximum speed, with a very intense hiring activity (Figure 4.3a), which consequently leads to have an increasing number of associates being promoted to partnership at each period, thus amplifying the number of partners employed in the firm, who therefore need an increase share of new associates for effectively perform their activities. This occurs because the leverage ratio, which defines how many associates are appointed to each partner, is for generalist fairly high (Figure 4.1a) and it acts as a multiplier which intensify the hiring activity. Thanks to these demographic dynamics, the generalist PSF can rely upon the efforts of many associates, who are their primary source of revenues (Figure 4.6a). On the other hand, for specialist firms the hiring activity is not as intense (Figure 4.2b), which consequently prevents them to grow at the same pace of generalists (Figures 4.3a and 4.3b). For such firms specialized knowledge and not associates represent the main source of revenues. Thanks to the vast fund of knowledge, which each partner of the firm possesses (Figure 4.5b), specialized PSFs can raise their partners' fees over market standards far more than generalist partners can (Figures 4.7a and 4.7b). Partners' fees represent in this case the main source of revenue (Figure 4.6b).It is worthwhile showing, however, that according to the results produced by the model, it takes longer for specialist PSFs' profit per partner curve to attain equilibrium than for generalists (Figures 4.8a and 4.8b), since the strategic resource, which they rely upon needs a longer time to be effectively accumulated, since it cannot be promptly found in the market as in the case of associates (Dierickx and Cool, 1989).

These results, although specifically referred to PSFs, do provide suggestions that can be effectively employed in the light of the more general theoretical framework defined by resource partitioning theory (Carroll, 1985). This theory explains the evolution of an industry into partitioning

on the basis of assumptions that take into account almost solely the population-level forces that might prompt the founding of either a generalist or a specialist organization. As Carroll, Dobrev and Swaminathan (2002) maintain, for such theory to hold, first environmental resources are to be not uniformly distributed along some relevant dimensions (e.g. consumer tastes), with an unimodal peak. Given this market resources distribution, generalist organizations tend to compete against each others in order to acquire the most of them. When a generalist organization fails, they release resources, which are for the most part acquired by adjacent, surviving firms. This also contributes to increase the size of surviving generalists. Nevertheless, some market segments are too humble to be profitably exploited by such large, surviving generalists. Such resource spaces allow specialist organizations to enter and evolve in the market.

Although these industrial conditions play a fundamental role in explaining the rise and evolution of the generalist and the specialist organizations, organizational founding also rests on the individual activity of resource mobilization (Lomi, Larsen, and Wezel, 2006) As showed in the feedback loop diagram presented in Chapter 3 (Figure 3.3), once a firm has decided the market segment(s), which it intends to target, it promptly needs to take an investment decision that allows the firm to be internally structured and organized to provide a service or product, which effectively meets and fulfills its target segment's needs. In the specific case of PSFs, this means either employing a wide host of associates, who allow the firm to provide their services with relatively low fees (Jaffee, 2001), thus attracting a large number of highly fee sensitive clients, with fairly standardized needs (Maister, 1993) or developing specialized knowledge, which allows providing highly specialized services to serve the idiosyncratic needs of a small fraction of the overall client marketplace, but which allows partners to raise their fees over market standards to foster their firm's profitability. The results produced by the simulation model can therefore be regarded as a complement of the insights advanced by resource partitioning theory about the emergence of organizational diversity in given industries. The conclusions, which the original theory has suggested about those industrial conditions

that lead to assess the coexistence of processes of market concentration and proliferation of specialist organizations, here act as assumptions, on the basis of which it is possible to focus on and highlight those entrepreneurial decisions, which play a role in shaping the evolution of either the generalist and the specialist organizational forms. Specifically, it is possible to conclude that an organization becomes generalist or specialist when, given particular industrial conditions, an entrepreneurial decision is taken, which allows internal processes and structures to be arranged for effectively allowing the acquisition or accumulation of the strategic resource, which are at the roots of these alternative organizational form's competitive advantage.

4.5 Summary

This chapter has presented the results, which the developed simulation model provided about the evolution of the generalist and the specialist organizational forms in the field of PSFs. Before presenting such results, an assessment of the validity of the model was provided. Once having assessed the reliability of the model structure and behavior, the results here presented have been analyzed in the light of the theoretical suggestions provided in Chapter 1 and of the basic feedback loop model presented in Figure 3.3 of Chapter 3 for answering the first research question of this dissertation, i.e. *how do organizations become generalist or specialists*?

In order to answer this question, the theoretical framework shaped by resource partitioning theory has been complemented by suggestions about the role that entrepreneurial decisions play in the evolution of these alternative organizational forms. More specifically, the empirically supported suggestions about the conditions that can lead an industry to become partitioned (Carroll, 1985), with a special concern devoted to professional service industries (Boone, *et al.*, 2000; Jaffee, 2001), has been here employed to define the general circumstances, which can foster the emergence of the generalist and the specialist forms within the same industrial context. Nevertheless, in order to effectively understand which mechanisms contribute to make an organization become generalist or specialist, entrepreneurial decisions have been attached central attention and have become the

crucial variables, which have been examined. In particular, the simulation results have showed that the decision of being generalist or specialist, which results from industrial considerations, prompts the entrepreneur to arrange the internal structures and processes in a markedly different fashion. Only when the internal arrangement of such firms allows the full exploitation of their key strategic resource (in this case, associates for generalists and specialized knowledge for specialists), is the firm able to profitably evolve in a partitioned industry as a generalist or a specialist.

Chapter 5
Path Dependencies and Positive Feedbacks

Exploring the Barriers to Organizational Change in Professional Service Partitioned Industries

5.1 Introduction

Resource partitioning theory holds that the coexistence of generalist and specialist organizations within the same industrial context can be explained with reference to the fact that these two types of firms, although part of the same industrial environment, perform their activities in two different market locations. Carroll (1985) himself claims that he "call[s] the process that generates this situation [*of specialist organizations populating the same industrial setting of generalists*] resource partitioning, because it results in an environment that is clearly partitioned into the general and specialized markets". For an industry to become partitioned, however, some conditions must hold, among which "the assumption that organizations are not fully pliable and cannot change strategies instantaneously or even regularly, […] the assumption that chosen organizational strategies constrain the options and activities available to an organization" (Carroll, 1985: 1272).

Given the focus of investigation featuring resource partitioning theory, which considers the dynamics of an industry as a whole and does not enter thoroughly into the details of the internal organizational characteristics of the firms populating those markets, such assumptions have not been investigated within the original theory, at least to my knowledge. The aim of this chapter is to employ the simulation model presented in Chapter 3 to understand why and to what extent the organizations populating a partitioned industry, embodied in the generalist and specialist archetypes, are unlikely to fruitfully alter their strategic orientation, thus answering the second research question of this dissertation, i.e. *why would/could a specialist not become a generalist or vice versa*?

In order to answer this question, a better specification of the core characteristics that distinguish the specialist and the generalist PSF is provided. On the basis of such theoretical

reflections, the feedback loop diagram presented in Figure 3.3 will be employed to advance suggestions on the factors leading such firms to be unable to easily and successfully alter their strategies. The formal simulation model will be hence employed to test the plausibility of such suggestions, which will be then discussed.

5.2 Identify organizational forms in Professional Service Industries

Recent theorizing in sociology has invoked a better specification of the idea of form in order to effectively conduct investigations on organizations (Pólos, *et al.*, 2002). In order to have a definition of form that possibly encompasses all of the possible characteristics, which an organization might display in different industrial contexts, Pólos and colleagues (2002) focused on those features, defined as a combination of codes, which an organization can legitimately possess, and which contribute to define their identity. In order to fully understand what an organizational form is, one should therefore detect that set of core characteristics and mechanisms, which guide and possibly constrain the patterns of behavior of an organization. The characteristics listed in Chapter 1 for identifying the generalist and the specialist PSFs need therefore to be considered in a wider theoretical framework, in order to understand why and what makes such organizational archetypes being regarded as pure organizational forms.

According to Baron (2004), "in work organizations, especially those that depend largely on knowledge and human capital [*as in the case of PSFs*], organizational identity frequently emanates most powerfully from the nature of the employment relations and personnel practices that bind workers to the enterprise" (p. 5). This is an innovative perspective for identifying organizational identities and hence detect organizational forms, which has traditionally isolated such identities with reference to the concrete system, which an organization is embedded within, defined in terms of suppliers, consumers, regulators and intermediaries (Ruef, 2000).

Baron (2004) identifies three specific features, which appear to have crucial relevance in shaping labor market identities. These are:

1. *Sharpness and resonance*. Given a population of organizations, an organizational form can be depicted and be regarded as *sharp* when it is possible to detect a cluster, which shows homogeneity among the organizations that are part of it and have a clear center (i.e. prototypical cases), and heterogeneity with respect to other clusters, which are also averagely significantly distant from it. Such cluster can be also *resonant*, when its sharpness can be denoted concurrently along many dimensions (e.g. social, economical, political).

2. *Focus*. An organization can be defined as focused based on the extent that it "can broaden (or weaken) its offering without running the risk of alienating its core clientele or being viewed by them as illegitimate" (Baron, 2004: 11). This claim about identity closely relates to the previous ones, since it is plausible to deem that the more sharp and resonant an organization is, the less likely it would occupy intermediate positions in an industry.

3. *Authenticity*. This concept is extremely well proposed by Baron (2004) himself, when he claims that "[a]n organizational identity that is authentic precludes certain alternatives from consideration simply on the grounds that they would not be genuine or thinkable, even if they might be profitable" (Barron, 2004: 14). This concept stands in close relation to the previous, since it is possible to suggest that the more sharp/resonant and focused an organization is, the more authentic it would likely to be.

Defining an organizational form on the basis of factors relating to the labor market instead of the product market, as Baron (2004) proposes, does play an important role in understanding how it would or could evolve. On the basis of the data collected for a project on young technology companies in Silicon Valley run by Stanford University and known as 'Stanford Project on Emerging Companies' (SPEC), Baron and Hannan (2005) suggest that companies that concentrate their efforts

in building a strong labor identity are less likely to alter it than product-based-identity firms. These indications do have a profound impact on the level of organizational inertia (Hannan and Freeman, 1984), which a firm would feature. The attempt to undergo organizational change for organizations with a strong labor market identity means losing their authenticity and, consequently, their ability to be viewed as a legitimate organizational form in a given industrial environment. This occurs because for organization with a strong labor market identities, the inertial forces proposed by Hannan and Freeman (1984), i.e. *goals*, *forms of authority*, *core technology* and *marketing strategy*, relate mostly to soft factors, such as organizational culture, social relations, knowledge, which cannot be promptly and easily altered and, moreover, any attempt to change this organizational features would be very likely to emanate disruptive effects throughout the whole organization (Baron, 2004).

The labor-market-based organizational identity proposed by Baron (2004) appears to perfectly suit the definition of PSFs. Such firms do base their identity on knowledge and human capital, as showed in Chapter 1, and do find in human-resources-related practices and mechanisms their core organizational traits. Within the whole universe of PSFs, it is possible to detect different organizational forms (Maister, 1993; Løwendahl, 2005; Malhotra, *et al*., 2006), which the generalist and the specialist archetypes represent sharp/resonant, focused and authentic prototypes of, leaving little or no room for intermediate or hybrid forms to emerge, as small generalist would be (Boone, *et al.*, 2000; Jaffee, 2001). Finally, the relevance of the labor market identity for PSFs is highlighted by Maister (1993) and echoed by Løwendahl (2005), who claim that the ability of a firm to attract and retain their employed, who embody the core strategic resource, which this firm relies upon, i.e. knowledge, is at the basis of its ability to attain and sustain their competitive advantage.

Given this close connection between the labor market type of identity proposed by Baron (2004) and PSFs, it is possible to hypothesize that for such firms any attempt to undergo major strategic and organizational changes would appear to be highly disruptive, conceivably far more upsetting than in the case of organizations with a product-based identity. The simulation model

presented in Chapter 3 will be employed to investigate the plausibility of this suggestion, hence possibly providing verification for the assumptions proposed by Carroll (1985) according to which the generalist organizations populating a partitioned industry are too inflexible for successfully change their orientation.

5.3 Path Dependencies and Inertial Forces in PSFs

According to the above-presented theoretical reflections, it is possible to envision that PSFs, the identity of which is based on soft, human-related factors, are unlikely to successfully undergo major changes, since such factors represent a strong source of organizational inertia (Hannan and Freeman, 1984; Baron, 2004). What are the inertial forces that prevent PSFs to gain advantages from organizational change attempts? In order to answer this question, one can refer to the feedback loop diagram presented in Figure 3.3.

As indicated in Chapter 3, the model provides a representation of the underlying logic governing the arrangement of PSFs' internal structures and processes. This diagram illustrates that, by taking an initial investment decision that either points towards hiring large number of associates or to develop specialized knowledge, a PSF would evolve in either the generalist or the specialist form. This model, however, also provides an intriguing insight. Once a firm needs to make its re-investment decision, it can choose either to persist in holding its former strategic orientation or to shift to the alternative one, possibly for competitive reasons. In the former case, the firm would reinforce the dominance of the loop, which it has previously triggered. This occurs because, by re-allocating a greater amount of resources to the flow, which the firm had formerly activated, the rate at which this flow accumulates into its related stock intensifies. In the second case, by reconsidering its resource allocation decision, the firm might run into high risk, since this strategic shift might cause the firm to give up part of the competitive advantage formerly attained. By changing the resource allocation decision, the firm would dampen the positive effects on profitability it had formerly enjoyed, without promptly benefiting from the activation of the alternative loop. This occurrence can

be effectively understood by analysing the dynamic behaviour generated by the operation of the model presented in Figure 3.4

Figure 3.4 presents an instance, whereby a PSF decides to allocate resources to hiring associates, thus fostering a generalist strategic orientation. By triggering the Generalist Feedback, while holding back the Specialist one, this decision makes the firm mostly reliant upon associates for generating profits, especially over time, with only a limited contribution to profit generation provided by new knowledge acquisition and development. If a firm persists in maintaining its initial strategic orientation, it would strengthen over time the positive effects, which the predominant feedback loop has on profits. If, on the other hand, a firm modifies its resource allocation decision, thus causing a shift in its strategic posture, the firm might create large risks and costs. In Figure 3.4, the value of the costs, which the firm would have, is represented by the size of the gap between the "associates" and the "knowledge development" curves, which increases over time.

In summary, the causal diagram depicted in Figure 3.3 shows that, although these two feedback loops are both active, the decision to allocate resources to hiring or to knowledge acquisition makes one of these circuits prevail on the other. Once such decision has been made, the reinforcing feedback loop it triggers locks the firm in the pursuit of that given strategy, thus restricting the likelihood of taking up the alternative one. This path-dependency mechanisms highlights that any change in its strategic focus, especially in the long run, would cause a firm to have extremely high switching costs, due to the dramatic change in the arrangement of their internal structures and processes and external relationship, on the one side (Hannan and Freeman, 1984), and to the unlikelihood of successfully competing against other firms that have already an established competitive position in the competitive arena, they decide to switch into, on the other (Boone, *et al*., 2000; Jaffee, 2001).

5.4 Simulating the Strategic Change

In this section the model is applied to investigate the plausibility of the hypothesized path-dependent nature of the processes that foster the emergence and sustain the profitability of generalist and specialist PSFs, respectively. To conduct this experiment, the model presented in Chapter 3 is applied to assess the consequences of a change in the strategic orientation of PSFs from generalism to specialism and vice versa.

In order to simulate such change, the values of the parameters employed as proxies of the business orientation taken by a PSF (see Table 3.3), needed to shift from those featuring a generalist firm to those of a specialist, and vice versa. To allow the model operating this change, a specific function included the simulation software used to develop the model (Powersim Constructor, Version 2.51) was employed. This is the 'ramp' function, which allows a parameter to grow or decline linearly with a given slope over a given period of time. This specific function has been chosen, because the linear change between the values is assumed to denote the gradual, non-abrupt change, which the firm is undergoing. In the simulation, the slope of the curve was defined by the difference between the value of the parameters featuring either the generalist or the specialist law firm, divided by the length of time, during which the strategic change was assumed to occur. The time span of the strategic change was in this simulation set to 15 periods, and it is assumed to occur between period 40 and period 55, i.e. towards the end of the simulation time. This allows assessing the consequence of this shift the strategy pursued by a company, once its internal structures and processes already fully and effectively operate.

5.4.1 From Generalism to Specialism

The first set of experiments concerned a generalist PSF attempting to become specialist. By changing its strategic orientation from generalism to specialism, this firm is assumed to engage in highly technical cases, which therefore require partners to be highly involved in their resolution. As a consequence, the likelihood of delegating case settlement to associates considerably reduces

(Galanter and Palay, 1991). This change triggers the re-definition of a number of important structures and processes. First, the leverage ratio needs to reduce, since the peculiarity of the projects undertaken by specialist firms inhibit delegation, hence the number of associates that a partner can effectively sustain. The model does reproduce this behavior, as one can observe in Figure 5.1a.

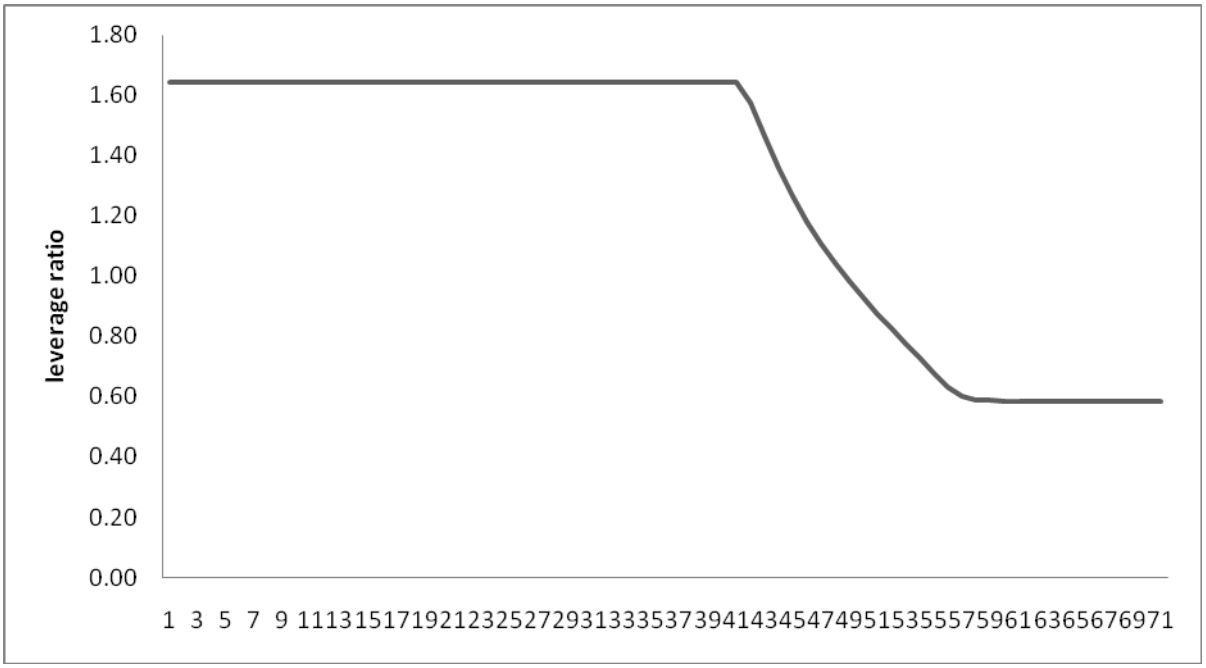


Figure 5.1a: Leverage ratio

This reduction of the leverage ratio consequently impacts on the demographic structure of the firm as a whole, which needs to have proportionally more partners than associates (Figure 5.2a). The firm's hiring flow therefore decreases during the transition period, although after time 55, however, hiring suddenly increases (Figure 5.3a). This occurs because during the process of change, promotions drop, too, in response to the decline of the level of the associates' stock, which would make the number of employees rewarded with partnership smaller. After the change is complete, the firm would start growing again, although at a slower pace, thus making the hiring curve rising in a more stable way.

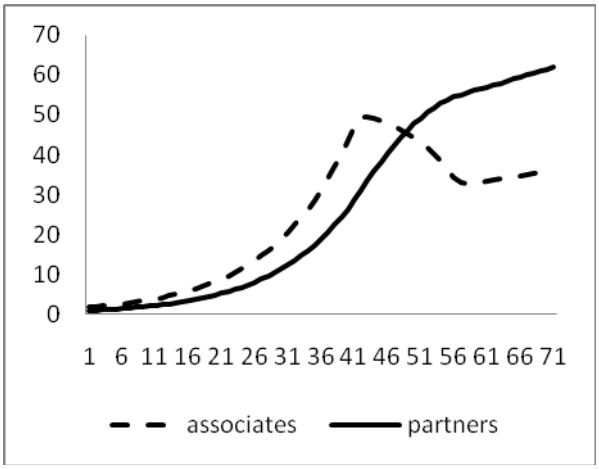


Figure 5.2a: Internal Demography

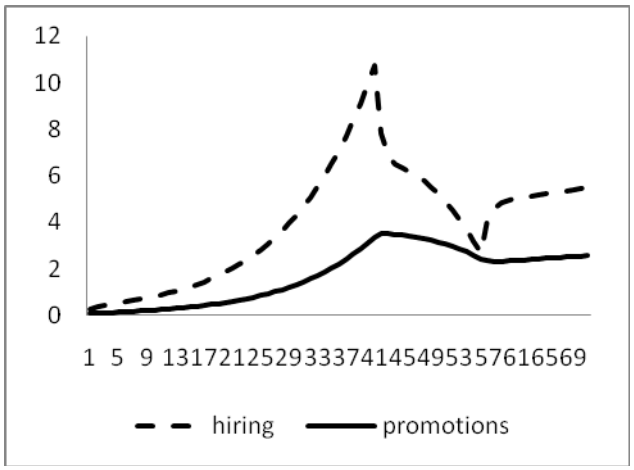


Figure 5.3a: Hiring/Promotions

Another important consequence imposed by the specialist strategic position concerns the intensification of the knowledge that starts 'flowing' into the firm (Figure 5.4a), which makes the overall fund of knowledge expands, as showed in Figure 5.5a. However, since the intensity of the promotion flow slowed down, thus reducing the pace at which the level of the partner stock increases, the 'knowledge per partner' ratio sharply increase (Figure 5.6a).

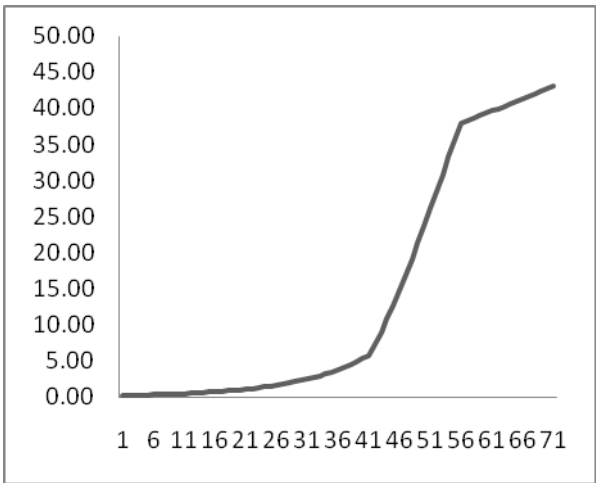


Figure 5.4a: Knowledge increase

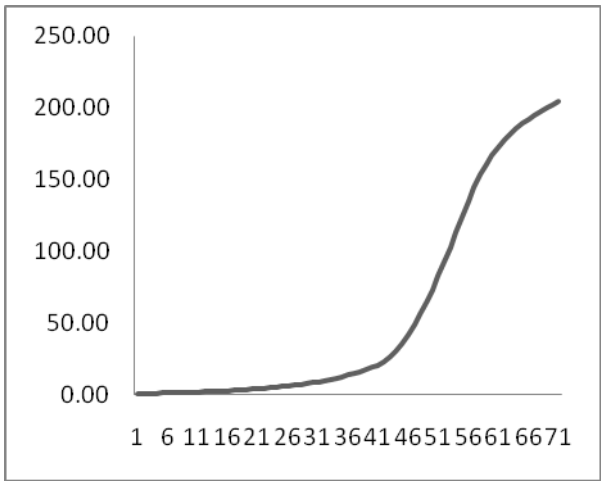


Figure 5.5b: Knowledge stock

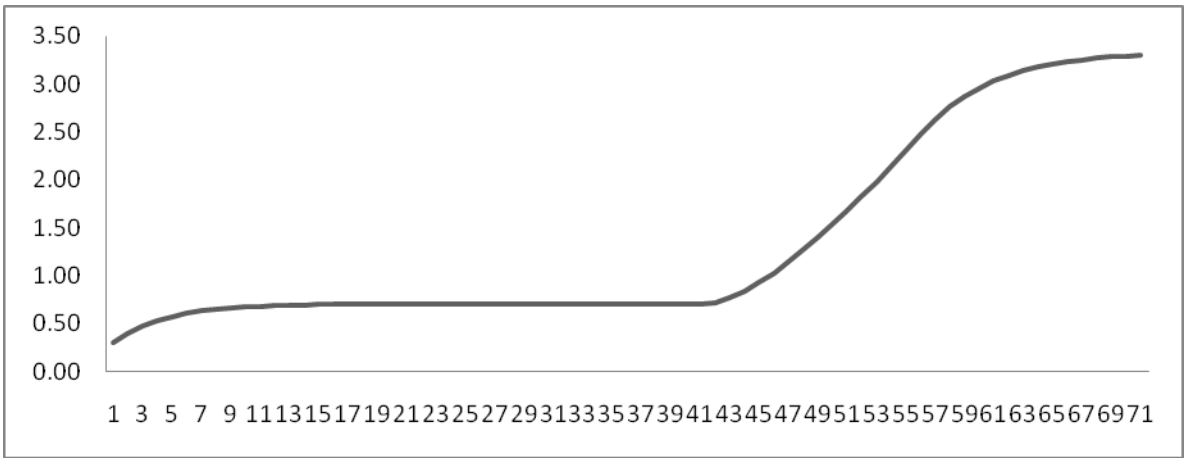


Figure 5.6a: Knowledge per partner

Finally, the role associates play in generating revenues also declines. This behavior is effectively reproduced in Figure 5.7a, where we can see that during the transition period, the fees generated by junior staff considerably drop, and start growing again, at a far lower pace, only when the change process has finished. Figure 5.7a also shows that, from time 40, partners' revenue-generating power is overwhelming. This is a consequence of the increase of the 'knowledge per partner' ratio, which allows the firm to benefit from the service delivery premium price (Figure 5.8a).

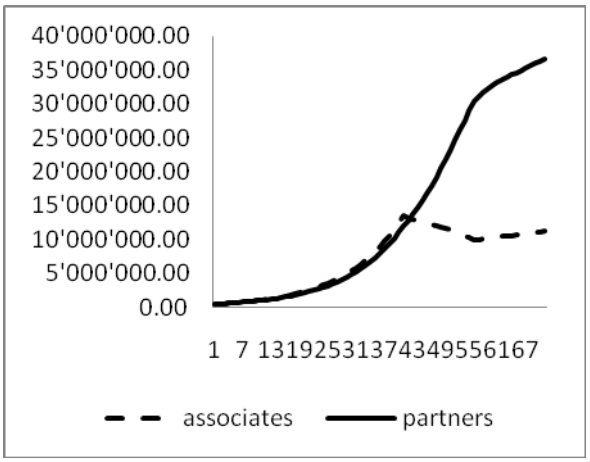


Figure 5.7a: Sources of Revenue

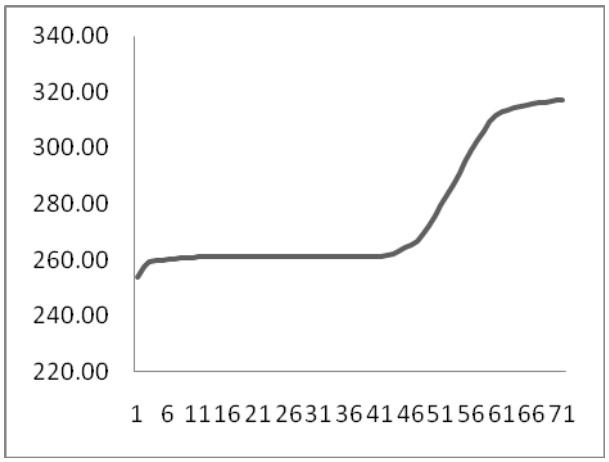


Figure 5.8a: Partners' billing rate

These results show that by modifying its strategic orientation from generalism to specialism, the law firm does manage to arrange its internal structures and processes appropriately. However, the impact this strategic change has on its profitability is disastrous, as portrayed in Figure 5.9a.

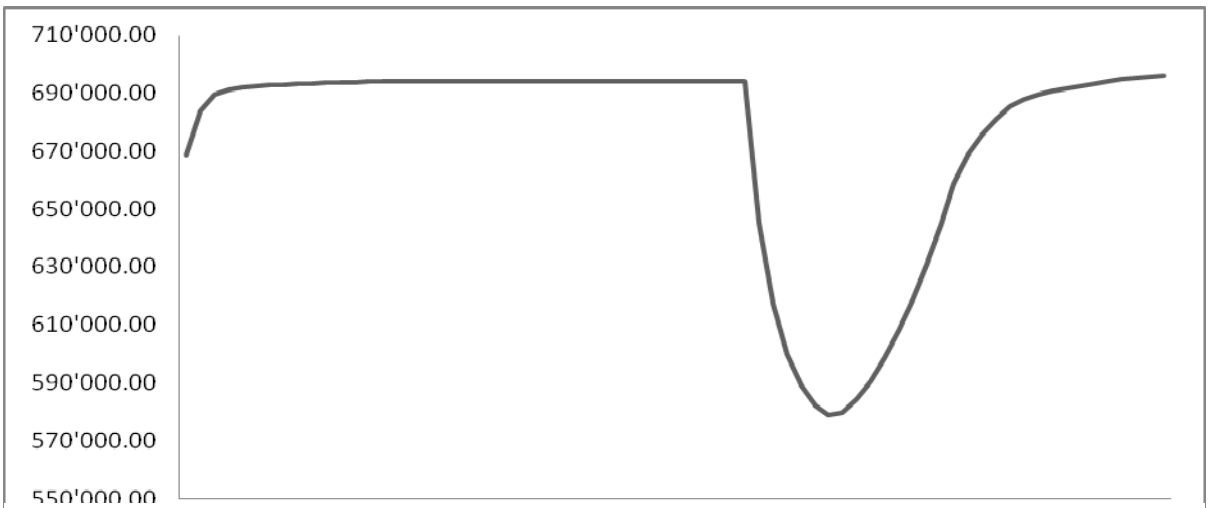


Figure 5.9a: Profit per partner

Figure 5.9a: Profit per partner

As we can see, as soon as the transition process begins, the profit-per-partner curve dramatically shrinks, and it starts growing again after three periods. This happens because the firm suddenly loses the revenue-generating power of its key strategic resource, i.e. associates (Figures 5.7a), while it still cannot benefit from the effect knowledge has on profitability. In fact, the levels of the overall stock of knowledge and of the knowledge for partner ratio start rising only from time 48 (Figures 5.5a and 5.6a), i.e. in the middle of the transition period.

5.4.2 From Specialism to Generalism

In this section, the consequences of a strategic change from specialism to generalism are analyzed. In this case, the firm decides to engage in more standardized cases, thus enlarging its client base. This allows partners to delegate a wider part of case resolution to associates and devoting a higher share of time on building client relationship or to manage the firm as a whole. The number of associates therefore broadens, thus making the leverage ratio of the firm increase (Figure 5.1b), thus having more associates than partners (Figure 5.2b). This

demographic change is fostered by the hiring curve, which grows more rapidly, thus increasing the intensity of the promotion flow, too (Figure 5.3b).

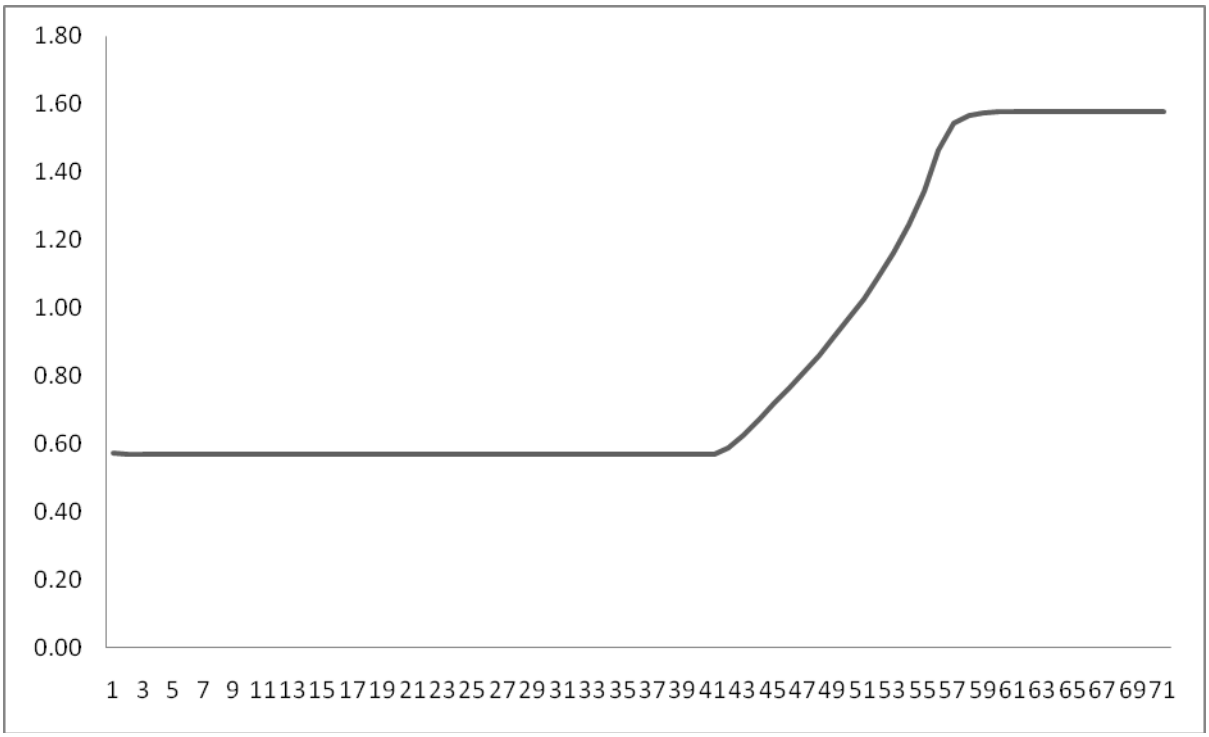


Figure 5.2b: Leverage ratio

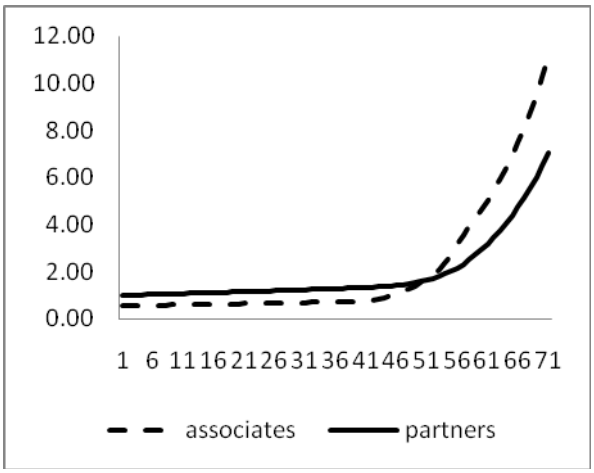


Figure 5.2b: Leverage ratio

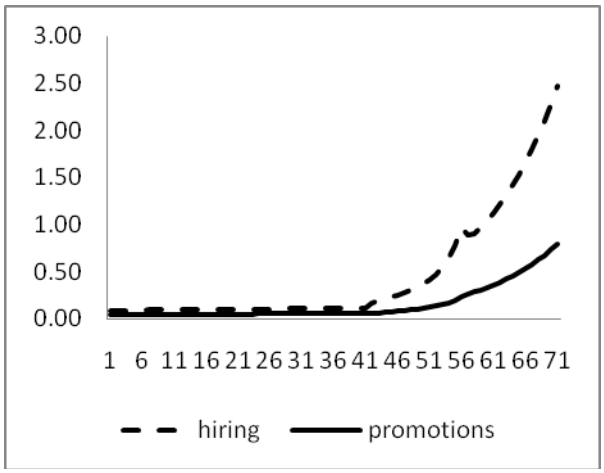


Figure 5.3b: hiring/promotions

The lower involvement of partners in case resolution also reduces the speed at which new knowledge is developed (Figure 5.4b), thus making the stock of knowledge of the firm sink (Figure 5.5b). This curve starts growing again at the end of the simulation period, thanks to the new demographic structure featuring the law firm after the transition is completed. In fact, although in

general there would be more associates than partners, the intensification of the promotion flow would make the stock of partners rise at a much faster rate than before, thus increasing the number of the only bearers of valuable knowledge in the firm, i.e. partners. Because of this new demographic structure, however, the 'knowledge-per-partner' curve would fall (Figure 5.6b).

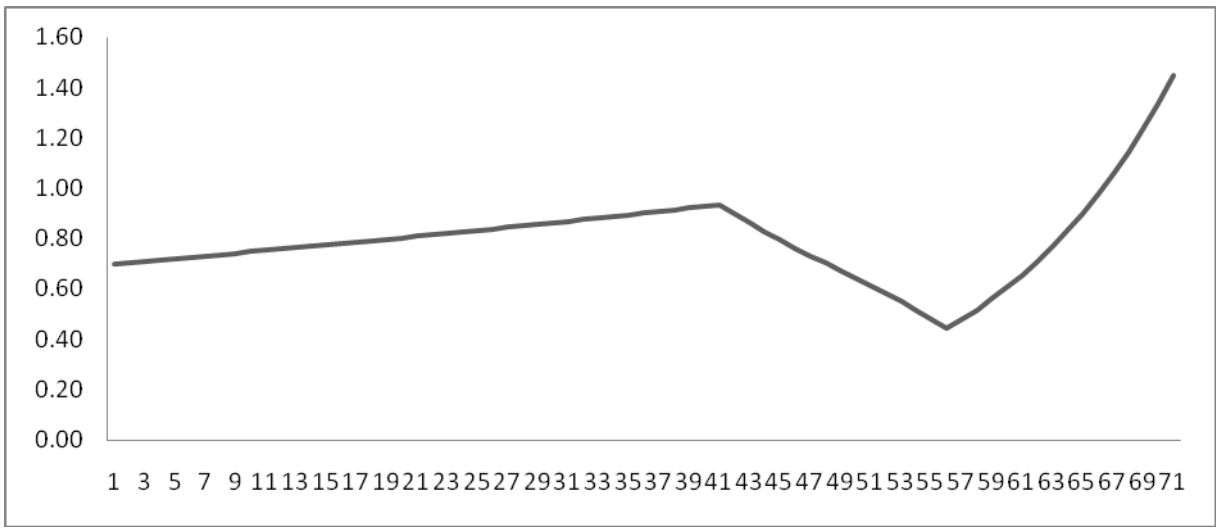


Figure 5.4b: Knowledge increase

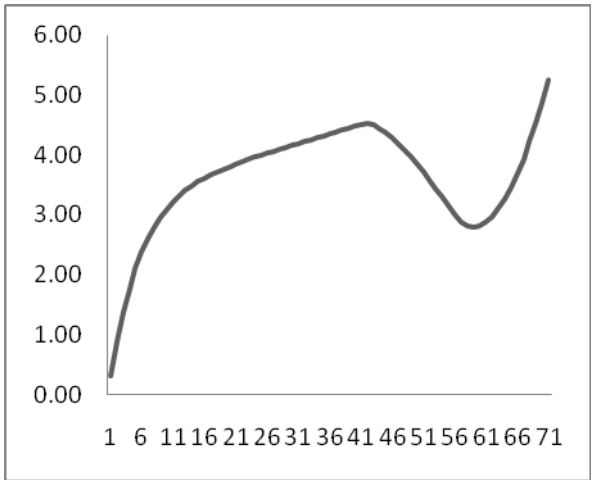


Figure 5.5b: Knowledge stock

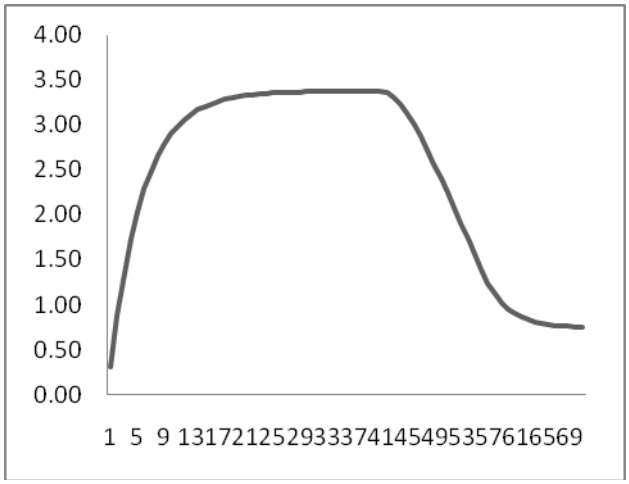


Figure 5.6b: Knowledge per partner

As a consequence, partners would not benefit from any premium price, thus making their billing rate shrink (Figure 5.8b). At the same time, however, by taking up a generalist strategy, the law firm would benefit from the revenue-generating power of associates (Figure 5.7b).

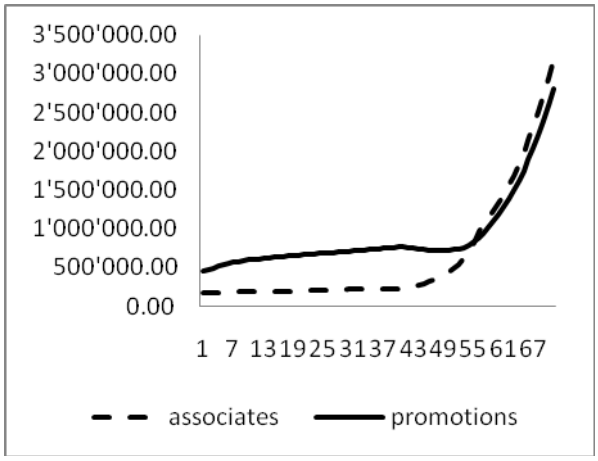


Figure 5.7b: Sources of Revenues

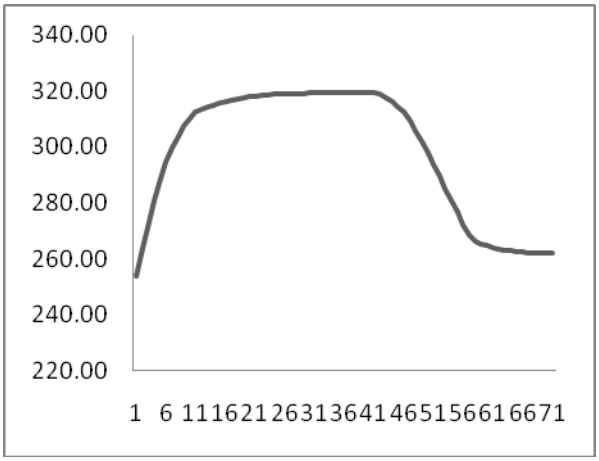


Figure 5.8b: Partners' billing rate

The effect of this type of change on the law firm's profitability is ambiguous. Figure 5.9b shows that soon after the transition process starts, the profit-per-partner curve drops, but then starts growing exponentially from time 50 to time 55 and then falls again.

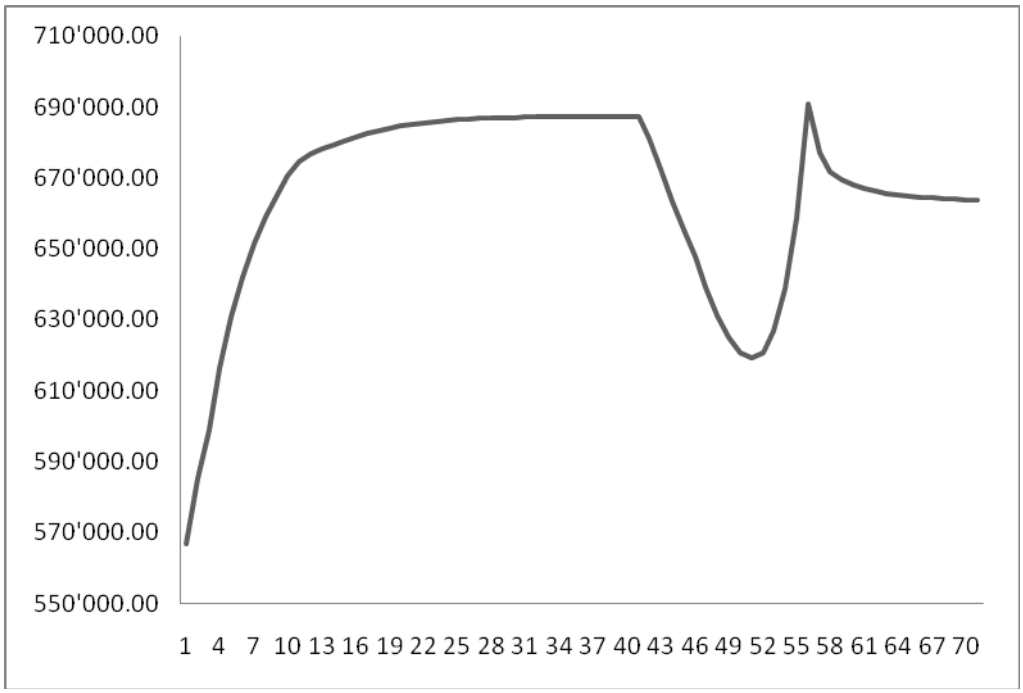


Figure 5.9b: Profit per partner

This peculiar behavior appears to be generated by the fact the law firm abruptly loses the positive effect knowledge has on its profitability, thus causing the dip in the profit-per-partner curve. The subsequent increase is instead caused by the fact that the firm manages to recruit those associates it needs to settle its new projects in a fairly rapid way. The process of hiring new associates, i.e. 'just-out-of-school attorneys" (Galanter and Palay, 1991: 90), is easier than developing new knowledge. Therefore, the firm experiences this sharp rise in its profitability because it simultaneously benefits from the efforts of the newly hired associates and of the stock of knowledge that, although diminishing, still sets at a fairly high level during this part of the transition period. After the transition is complete, however, this last strategic resource loses its competitive value and, as a result, the profit-per-partner curve drops again and sets at an equilibrium level.

5.5 Discussion

The experiments performed with the simulation model appear to be useful to advance propositions on the rationale behind one of the most stringent assumptions of resource partitioning theory, i.e. the inability of organizations to be fully flexible and, therefore, being able to change their strategic orientation in an easy and fruitful way. As it was presented in Chapter 3, the basic mechanism at the origin of either the generalist or the specialist organizational forms in professional service industries is given by a feedback system composed by two reinforcing loops, connected by a single variable, i.e. the initial resource allocation. This same structure was suggested to shape the evolution of these organizations, too. In fact, a PSF does not invest in the acquisition of a given resource only at the time it is founded, but it also needs to make other investment decisions along its existence. When it gets to the point of taking such decision, the firm can choose to maintain its previous investment preference or to move to the alternative one. This essentially means changing its strategic orientation, which leads to cease fostering the feedback loop that previously sustained its profitability and activating the alternative loop. Nevertheless, by making this decision, the firm would be very likely to experience profitability challenges, since it would lose the competitive power of the

resource, which previously fostered its success, to rely upon a resource, which is not sufficiently weighty (even in mere numerical terms) to have strong competitive relevance. The simulation does show that, although both when a generalist PSF attempts to become specialist and vice versa it is able to adequately arrange its internal structures and processes, in both cases the firm would experience a sharp dump in its profitability.

As Teece, *et al.* (1997) claim, a firm's competitive position is however proposed to be favoured or constrained by "the path it has travelled" (p. 22). A firm's initial investment decision or the system of routines, it has developed, are assumed to shape its future behaviour. Drawing upon Arthur's (1989) idea, according to which path dependency is likely to lead to inflexibility, the dynamic capabilities approach suggests that managerial and organizational decisions and processes would be likely to perpetuate in time in almost the same fashion, thus locking the firm in the pursuit of a strategy that, more or less rationally, has led it to attain a given competitive position and role in a given industry. This would occur because, mainly in case of increasing returns, initial circumstances would trigger and be amplified by positive feedbacks, which hinder shifts from the firm's original strategic path. This suggestion perfectly explains the results produced by the simulation model.

These results also appear to support Barron's (2004) suggestions, according to which organizational inertia (Hannan and Freeman, 1984) would be particularly resilient in organizations with a strong labor market identity, as PSFs conceivably are. As the author himself claims, "firms that alter an established labor market identity in order to capitalize on the presumed popularity of a different approach […] risk being viewed by current and prospective employees as mercenary or duplicitous, rather than authentic in their commitment to a set of principles governing the employment relationship" (Baron. 2004: 24). For firms that primarily rely on human capital for fostering their profitability, "[t]he most obvious problem is that [*their*] assets walk out the door each day, leaving some questions about whether they will return" (Coff, 1997: 375). For PSFs, the risk of being perceived as non-authentic, in the sense advanced by Baron (2004), would be likely to increase

the possibility of voluntary leaving by their current employees and would possibly dampen their reputation in the labor market. Therefore, for such firms, the ability to uphold their identity in the labor market is vital. Moreover, the simulation results provide further support to Baron's (2004) suggestions, according to which the emergence of the identity of an organization occurs early in its existence and tends to persist in time.

5.6 Summary

"[T]he assumption that organizations are not fully pliable and cannot change strategies instantaneously or even regularly [*and*] the assumption that chosen organizational strategies constrain the options and activities available to an organization" (Carroll, 1985: 1272) are two of the most stringent conditions, for a market to be likely to become partitioned. Still, however, what factors make organizations unable to fruitfully undergo a strategic change in partitioned industries? This chapter has attempted to provide an answer to this question by examining the nature of the internal processes and structures of the generalist and the specialist organizational forms in professional service industries and assessing their level of inertia.

Thanks to the simulation model developed to conduct this research, it has been possible to show that an organization attempting to modify its strategic orientation, in this case moving from generalism to specialism and vice versa, manages to properly modify its internal structures and processes. Nevertheless, it is not able to sustain its profitability. Drawing upon the suggestions advanced by evolutionary theory (Nelson and Winter, 1982; Teece, *et al.*, 1997), this occurrence has been explained on the basis of the idea that the initial investment decision, which is at the roots of the evolution of an organization towards a given identity, constrains its ability to diverge from it, especially in the long run. Following Baron (2004), the path-dependent character featuring the evolution of an organization is particularly strong for those firms, which primarily rely upon their human capital to foster and sustain their competitive advantage, as PSFs are.

It is therefore possible to conclude that the inflexibility of the organizations populating partitioned industries, which is one of the very core assumptions at the roots of resource partitioning theory, is a consequence of the strong inertial forces (Hannan and Freeman, 1984) that feature their internal structures and processes that, if changed, cannot promptly release their strategic power.

Chapter 6
Growth Patterns of Generalist and Specialist Professional Service Firms

6.1 Introduction

Resource partitioning theory (Carroll, 1985) has recently gained a great deal of attention as one of the most complete and valuable theories explaining the emergence of instances of organizational diversity in given industries (Boone, *et al.*, 2006). This theory provides a well supported analysis of those processes and mechanisms, running at the population level, allowing specialist organizations to emerge and proliferate in highly concentrated industries, i.e. where a few generalist firms control almost all of the available resources. Beside this core issue, this theory reveals another important industrial pattern featuring partitioned industries. It shows that generalist organizations are likely to grow large in size, while specialists tend to remain small (Carroll, 1985; Carroll and Hannan, 2000). What factors account for this strictly bimodal size distribution in partitioned industries? As Jaffee (2001) maintains "[t]his question implicates important issues of both industry evolution, such as the evolution of size distributions and thus levels of market concentration, and firm strategy, including the important role of firm size for survival and performance" (p. 113).

Resource partitioning theory identifies the scale-based model of competition (Carroll and Swaminathan, 2000) as the key industrial mechanism behind the growth of generalist firms. The original theory assumes that "the dominance of generalists in the market represents the equilibrium state of a long, competitive process dictated by economies of scale" (Carroll, 1985: 1268). Generalist organizations compete among each others in order to conquer and control, over time, increasing shares of an industry's overall resource endowment, which contribute to make them growing in size. The larger a firm grows, the stronger and more secure its position in the industry is. Those

organizations, which do not manage to increase their size, are out-competed. As Jaffee (2001) maintains, this dynamic subtending the scale-based model of competition among generalist organizations creates "a self-fulfilling cycle of increased growth". (p. 121). Figure 6.1 provides a feedback loop representation of this process.

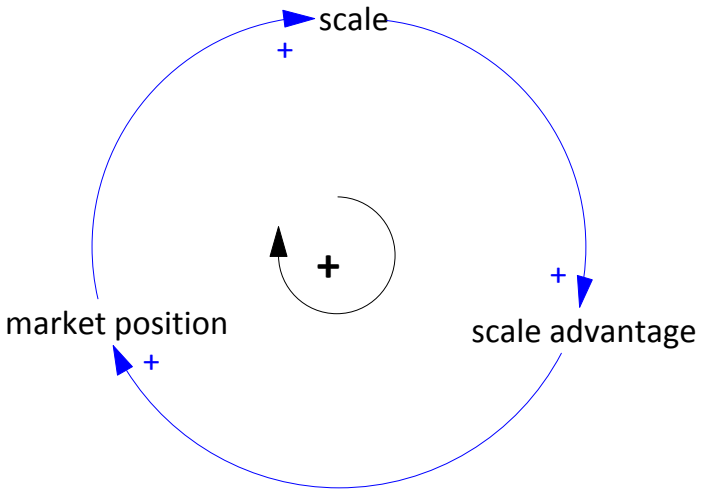


Figure 6.1: A Feedback Loop Representation of the Scale-Base Model of competition

On the other hand, a convincing explanation of the factors leading specialized firm to remain small has not been advanced, yet. As Jaffee (2001) suggests, from a theoretical viewpoint, resource partitioning dynamics might foster specialist firms' growth. According to the author, "[t]hat resource-partitioning dynamics would increase the growth of specialist organizations corresponds with the general viewpoint that organizations grow to meet unfulfilled demand" (Jaffee, 2001: 117). This means that, by filling those resource spaces, which exist at the edge of the market center, specialists can experience increased growth. At the same time, however, specialists' growth might be restrained by the fact that these left over resource spaces are not as rich as those occupied by generalists (Carroll, 1985; Péli and Nooteboom, 1999). Empirical evidence of resource partitioning processes support and extend this last view, by suggesting that, by growing large in size, specialist organizations would give away their competitive advantage over generalists, which exactly resides in their commitment to remain small, which contribute to foster their status (Park and Podolny, 2000), their

social identity (Carroll and Swaminathan, 2000) or their ability to personalize the services, which they provide to customers (Boone, *et al.*, 2000; Jaffee, 2001).

Resource partitioning theory has, however, only partially dealt with the issue of generalist and specialist organizations' growth. One of the last attempts to understand how resource partitioning dynamics might predict the growth of these organizational forms has been provided by Jaffee (2001), who has explored this issue in the domain of professional service industries, specifically in that of corporate law firms. As suggested in the preceding chapters, generalist PSFs find in the exploitation of scale economies their chief source of competitive advantage, which are mainly linked to the standardized nature of the projects, which they engage in. Hence, competition among generalist PSFs can plausibly be deemed as following the scale-based competition model suggested by Carroll and Swaminathan (2000), and this consequently forces them to grow large in size, in order to survive and be profitable. Jaffee (2001) provides strong empirical support to this claim. On the other hand, it was also suggested that specialist PSFs base their competitive advantage on their ability to provide highly customized solutions to their clients. According to Jaffee (2001), this does not only provide a rationale explaining why and how these firms can foster their profitability in concentrated industries, but it also explains why they tend not to grow. As he claims, "[s]pecialist resist growing too large in size in part due to their fear of losing clients that use specialists based on their small size and high partner-to-associate […] ratio" (Jaffee, 2001: 120). As a consequence, resource partitioning dynamics are suggested to reduce specialist PSFs' growth. Even in this case, his research provides strong empirical support for this hypothesis.

The results offered by Jaffee (2001) represent a valuable insight into the mechanisms that foster the growth of generalist and inhibit that of specialist organizations. Nevertheless, Galanter and Palay (1991) claim that industrial reflections need to be combined with an analysis of these firms' internal structures, in order to fully understand their growth. This chapter aims at filling this gap. It attempts to understand and assess to what extent the particular size distribution featuring

partitioned industries can be explained by the different internal configuration of the generalist and specialist organizational forms, with a sheer focus on PSFs.

The most valuable and developed theory about the growth of law firms, the insights of which can be effectively generalized to the whole realm of PSFs, is Galanter and Palay's (1991) *tournament of lawyers model*. This model shows that the associative nature of these firms, where senior staff combine their human capital with the labor supplied by junior staff, compels these firms to set up internal structures and processes to avoid the two counterparts to act opportunistically. At the same time, according to the authors, these mechanisms also represent an internal growth engine for these firms. Although this model primarily refers to the growth of big law firms, identifiable with generalist organizations, according to the authors, it can also be employed to understand why small, specialist firms tend to remain small, although this last suggestion has not been empirically assessed. Once again, the use of a simulation model appears to be the most useful tool to understand, on the one hand, which structures give rise to the growth pattern of large law firms observed by Galanter and Palay (1991) and, on the other, to provide logical consistency to the theoretical propositions the authors advanced to explain why specialized firms remain small.

This chapter will be structured as follows. The next section will describe and explain the operating principles of Galanter and Palay's (1991) law firms' growth model, which will then be formalized into a feedback loop diagram. The theoretical part will end by showing how this model can be employed to understand why specialist law firms tend to remain small. These theoretical suggestions will be then be analyzed in the light of the results, which the simulation model presented in Chapter 3 produced, as reported in Chapter 4. Moreover, some experiments that were performed to test the strength of such propositions will be presented.

6.2 Galanter and Palay's growth model

Galanter and Palay (1991) suggest that the growth of law firms can be effectively explained by analyzing the operation of the internal governance structures that they have adopted in response to changes in the environment where these firms perform their activities. Before presenting how their growth model works, it is therefore necessary to understand why law firms (and PSFs in general) are structured the way they are.

A law firm, like many other professional settings (e.g. medical practices, accounting firms), is organized as a cooperative association (Galanter and Palay, 1991: Maister, 1993), featuring two organizational layers: associates and partners. Why would a lawyer decide to associate? "An attorney, like any other producer, combines labor with the capital she has accumulated over time" (Galanter and Palay, 1991: 89). An attorney's capital mainly consists of human capital, defined in terms of personal skills, formal education, reputation and clients relationships. A lawyer's human capital positively impacts on the demand for his/her services. Nevertheless, a lawyer might face a situation, whereby (s)he cannot handle the overall amount of projects (s)he is able to attract, given the constraints on his/her labor supply, defined by the working hours per day. To maximize his/her output, (s)he would therefore need to add increasing units of labor. These can be supplied by attorneys, who still have not developed enough human capital to attract clients, but a full complement of labor, i.e. associates. Hence, lawyers enter into an association to effectively maximize their "production function", defined in terms of (human) capital, provided by experienced attorneys (i.e. partners), and labor, provided by associates. As the authors maintain, "the law firm can be viewed as an internal market for the lending and borrowing of human capital." (Galanter and Palay, 1991: 107).

Nevertheless, by lending his/her human capital to associates, a partner might increase the risk that these will "grab and leave" with it or even destroy it. "Thus, in order to take advantage of her nonrival asset, [a partner] requires an effective method of monitoring the performance and behavior

of other lawyers" (Galanter and Palay, 1991: 69). This monitoring mechanism came to be identified by the authors as the "promotion-to-partner tournament", more generally acknowledged as the "up-or-out system" (Maister, 1993; Sherer, 1995; Morris and Pinnington, 1998). The basic rule of this tournament is that for a given, pre-arranged period of time, associates would be given a salary to perform activities for partners and during which they get trained. At the end of this period, a given percentage of these associates will be awarded partnership. Winners are declared on the basis of the quality of their work and the human capital they have developed. Losers are out-placed. This mechanism grants the firm a number of benefits. First, associates are induced to put all their efforts to enhance their human capital to produce high-quality results in order to win the partnership prize. This also assures that associates will not "grab and leave", since this would mean losing any chance to become partner. At the same time, by assessing that the declared percentage of preceding classes' associates has indeed been granted partnership, junior attorneys do have the assurance that the firm keeps its promise, thus reinforcing their incentives to produce high quality results.

The "promotion-to-partner tournament" does not only act as a valuable mechanism, thanks to which a law firm can effectively manage its associative organization, but it contributes to define why and how these firms (are compelled to) grow. As the authors maintain,

> "[g]rowth occurs because, at the end of the tournament, the firm must replace not only the losing associates who depart, but also all those who win and are promoted. If the firm did not hire associates to replace its newly promoted partners, then the pretournament partners would share their surplus human capital with fewer associates and, therefore, make less money" (Galanter and Palay, 1991: 102).

Two factors are proposed to foster the growth of a law firm. The first is the promotion percentage; the second is the human asset leverage. In particular, Galanter and Palay (1991) suggest that both factors should remain at least constant over time to foster the firm's growth.

The promotion percentage defines the level of human capital, which the newly promoted partners bring to the firm. Any alteration of this percentage is suggested to have a negative influence on the competitive position of a law firm. If it rises, the average human capital per partner would decrease, since a larger fraction of associates would be awarded partnership, who might not have developed enough knowledge and experience to produce valuable results. On the other hand, if the promotion percentage declines over time, associates would lower their expectations about the likelihood of being promoted, with consequential negative impacts on their morale and hence productivity (Galanter and Palay, 1991). In order to avoid such problems, the law firm is therefore induced to keep its promotion percentage constant, once defined.

The definition of the promotion percentage has a strong impact on outlining the law firm's human asset leverage. As already maintained, any increase of the human capital endowment of a firm leads to an increase in the number of clients it can attract, which in turn would increase the number of associates, who a partner can sustain. At the same time, it was suggested that a law firm can regulate the level of human capital endowment by calibrating its promotion percentage. Since this variable is unlikely to change over time, new partners will have on average the same human capital endowment as existing partners (Galanter and Palay, 1991). As a consequence, the human capital per partner remaining constant, the number of associates a partner will be able to sustain will follow the same trend, hence preventing the associates-to-partner ratio from changing.

The direct consequence of the stability of these two variables is a pattern of (exponential) growth. This occurs because "[a]s the firm promotes the designated percentage of associates, it must replace them and *must also hire enough new associates to keep the associates-to-partner ratio from falling*." (Galanter and Palay, 1991: 197. Emphasis in original). In fact, at each run, the law firm first needs to replace those who leave the firm either because they could not gain the partnership or because they got promoted. The replacement of these associates, however, does not grant the firm to meet the requirement of keeping the leverage ratio constant. In fact, by promoting a fraction of

associates, the number of partners employed by the firm rises, which consequently makes the leverage ratio reduce. In order to keep it back in balance, the law firm therefore needs to recruit a supplementary group of associates, alongside those hired for replacement, who would be appointed to sustain the effective resolution of the new clients' cases, which the new partners bring in thanks to their human capital. As Galanter and Palay (1991) claim, "[t]he firm needs these additions to the associate pool to support the new partners by using the new partners' shareable human capital." (p. 107).

To sum up, "roughly half of the growth is a by-product of the mechanisms used by law firms to govern the sharing of human capital. In order to maintain their existing organizational structure, these firms *must* grow exponentially; that is, the number of lawyers working for a firm inevitably will increase by a constant (or possibly increasing) percentage." (Galanter and Palay, 1991: 88, 89. Emphasis in original).

6.2.1 A feedback loop representation of Galanter and Palay's growth model of law firms

This section attempts to provide a feedback loop representation of Galanter and Palay's (1991) theory of law firms' growth previously presented. In order to design the causal structure, which gives rise to this pattern of exponential growth the authors suggest, I first conducted a textual analysis of their theory. This allowed identifying which elements define such structure and how they relate to each others to produce the behavior, which Galanter and Palay (1991) observed. Table 6.1 summarizes the results of this textual analysis.

Textual analysis *		
Variable	Definition	Relationship with other variables
Human capital	"Her human capital combines four types of assets. First, she possesses her pre-law-school endowment of intelligence, skills, general education, and the like. Second, she invests in her legal education and experience-dependent skills. […]. Third, […], an attorney invests in her professional reputation. […]. Finally, an attorney makes human capital investments in developing relationships with her clients." (G&P: 89, 90).	"Reputation […] acts as an *ex ante* indicator of the quality of service a client can expect from an attorney" (G&P: 90). "Her reputation and expertise […] increase the demand for her services." (G&P: 91). "The bigger each partner's reputation, the more secure and broader her client relations, […], the more associates she can sustain." (G&P: 105).
Partners' time on client	"her personal supply of labor, which is ultimately fixed by the working hours in the day." (G&P: 91)	"For a fixed quantity of labor, the additional output resulting from another unit of capital will diminish to zero. At this point, she has the potential for "surplus" capital." (G&P:91). ""Because risk increases with the number of users sharing the assets in question, the ability to monitor places real limits on the number of associates to whom a partner can lend capital." (G&P: 105).
Surplus capital	"All attorneys have some human capital. Some have more than they productively can combine with their own labor to produce additional outcome. We refer to these attorneys as having surplus human capital." (G&P: 92).	"When an attorney can share her human capital, she can increase her income by lending these assets to other attorneys." (G&P: 92). "A solo practitioner, P, who has shareable surplus human capital […], would like to lend or rent these assets to A, an attorney with little human capital of his own, but a full complement of labor. For convenience, one can thing of Pas a 'partner' and A as an 'associate'." (G&P: 92).
Promotion percentage	"the firm holds a tournament in which all the associates in a particular 'entering class' compete and the firm awards the prize of partnership to the top α percent of the contestants." (G&P: 100) "Losers […] will never become partners." (G&P: 101).	"In setting the promotion percentage, the firm essentially establishes the amount of human capital it will require new partens to bring to the firm." (G&P: 105, 106).
Hiring for replacement	"[T]he firm must hire new associates to take the place of those who won the tournament. […]. If the firm fires losers, then it must also replace them." (G&P: 102).	"Their replacement has the effect of maintaining firm size, not increasing it." (G&P: 102).
Human asset leverage	"associates-to-partner ratio." (G&P: 35, 59-62, 103-106, 122-23).	"[T]he firm […] must also hire enough new associates to keep the associate-to-partner ratio from falling." (G&P: 107).
* G&P refers to Galanter and Palay (1991)		

On the basis of the previously presented textual analysis, it is possible to provide a feedback loop representation Galanter and Palay's (1991) growth model. Given the complexity of this causal loop diagram, the constituent parts of the model will be gradually presented.

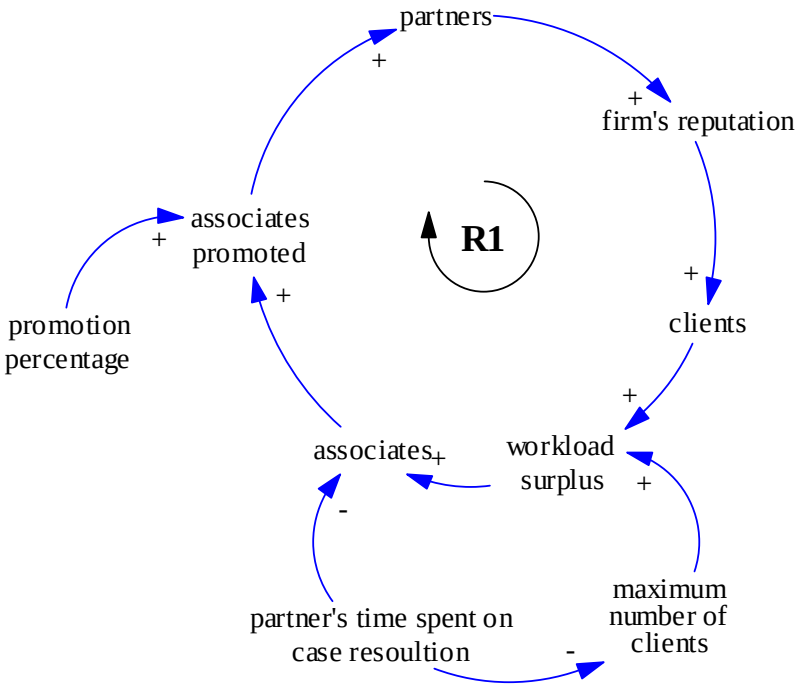


Figure 6.2: Effect of Partners' Human capital and Partners' Utilization Rate on Hired Associates

Figure 6.2 represents the central process subtending the growth of a law firm, denoted as R1. This loop shows that partners, who represent the "repository of firm knowledge" (Sherer, 1995: 671), contribute with their human capital endowment to build up the law firm's reputation, thanks to which they can attract new clients. Nevertheless, a partner is unlikely to spend all of his/her available working time on case resolution, since (s)he is also involved in administrative-related activities and in building clients relations (Maister, 1993). As a consequence, the more time a partner spends in solving a given case, the fewer clients (s)he can effectively follow. When a law firm is able to attract more clients than those its partners can effectively handle, it faces a workload surplus, which can be overcome only by adding new units of labors, provided by associates. This surplus intensifies the recruitment process, thus increasing the number of associates employed by the law firm. At the same time, however, the number of associates the law firm can recruit is also determined by the

time partners should spend in monitoring and assessing associates' work (Galanter and Palay, 1991). Since this is part of the moments, during which partners are not involved in case resolution, the more time senior staff spends solving a client's case, the less (s)he is likely to monitor his/her associates' work. Once associates have been recruited, they spend a given period working for their partners. At the end of it, a given percentage of these associates will be awarded with partnership, thus increasing the number of partners, who would expand the firm's overall human capital endowment, thus further enhancing its reputation and therefore reinforcing the strength of this loop.

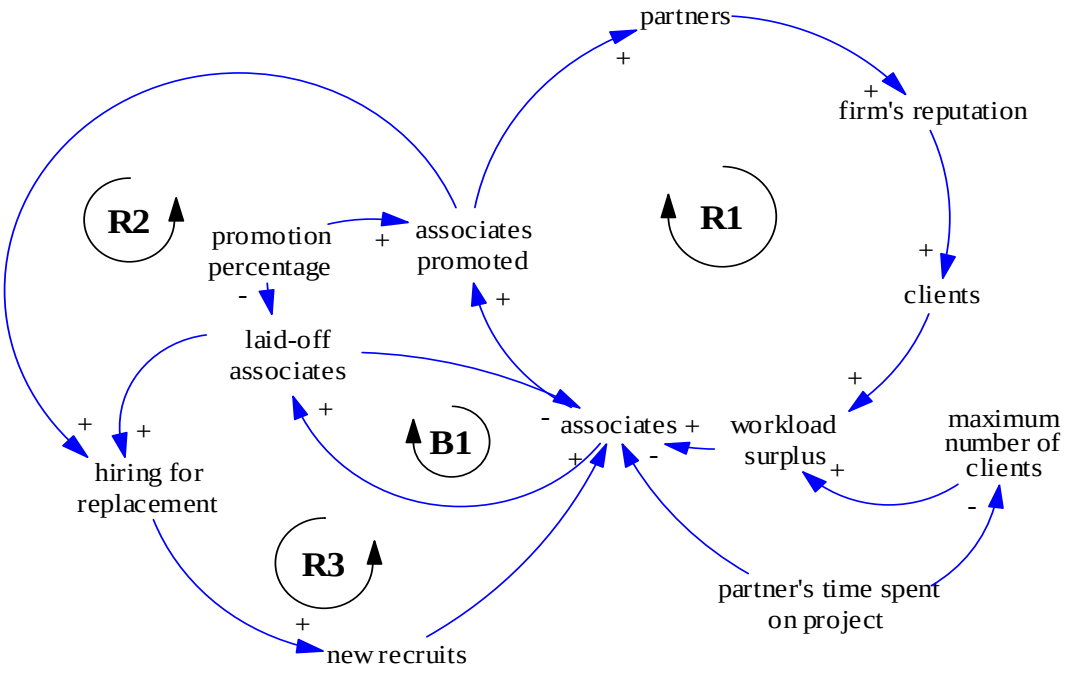


Figure 6.3: Hiring for Replacement Dynamics Added

According to Galanter and Palay's (1991) model, associates are not only recruited because the firm, thanks to the reputation of their partners, is able to attract new clients. New associates are also hired in order to replace those who left the associate hierarchical layer, i.e. both those associates who managed to win the partnership prize and those who are laid off at the end of the tournament. This dynamic is represented in Figure 6.3 by the joint operation of loops R2, R3 and B1, which combine to feedback loop R1, previously presented. The crucial variable, which triggers the operation of these two loops, is represented by the 'promotion percentage'. The tournament's basic rule compels those associates, who do not manage to be awarded with partnership, to be laid off. As

a consequence, in this feedback loop representation, the 'promotion percentage' variable positively relates to the number of associates promoted, i.e. the higher the promotion percentage, the higher the number of associates awarded with partnership, while it negatively connects to the number of associates, who are made redundant, i.e. the higher the promotion percentage, the fewer the associates who are fired.

Finally, the growth of a law firm was suggested to be produced by the necessity of these firms to keep their human asset leverage ratio constant. The higher this ratio is, the more associates the firm would need to recruit. The only two variables, which contribute to define this ratio, are obviously associates, who increase it, and partners, who decrease it. By promoting associates, the overall number of partners increases, thus reducing the leverage ratio. However, according to Galanter and Palay's (1991) model, this ratio needs to be kept constant, in order to avoid profitability problems (see also Maister, 1993). Therefore, in order to put this ratio in balance, the firm needs to recruit new associates, alongside those who had been hired for replacement. These dynamics are represented by feedback loops R4 and B1 in Figure 6.4.

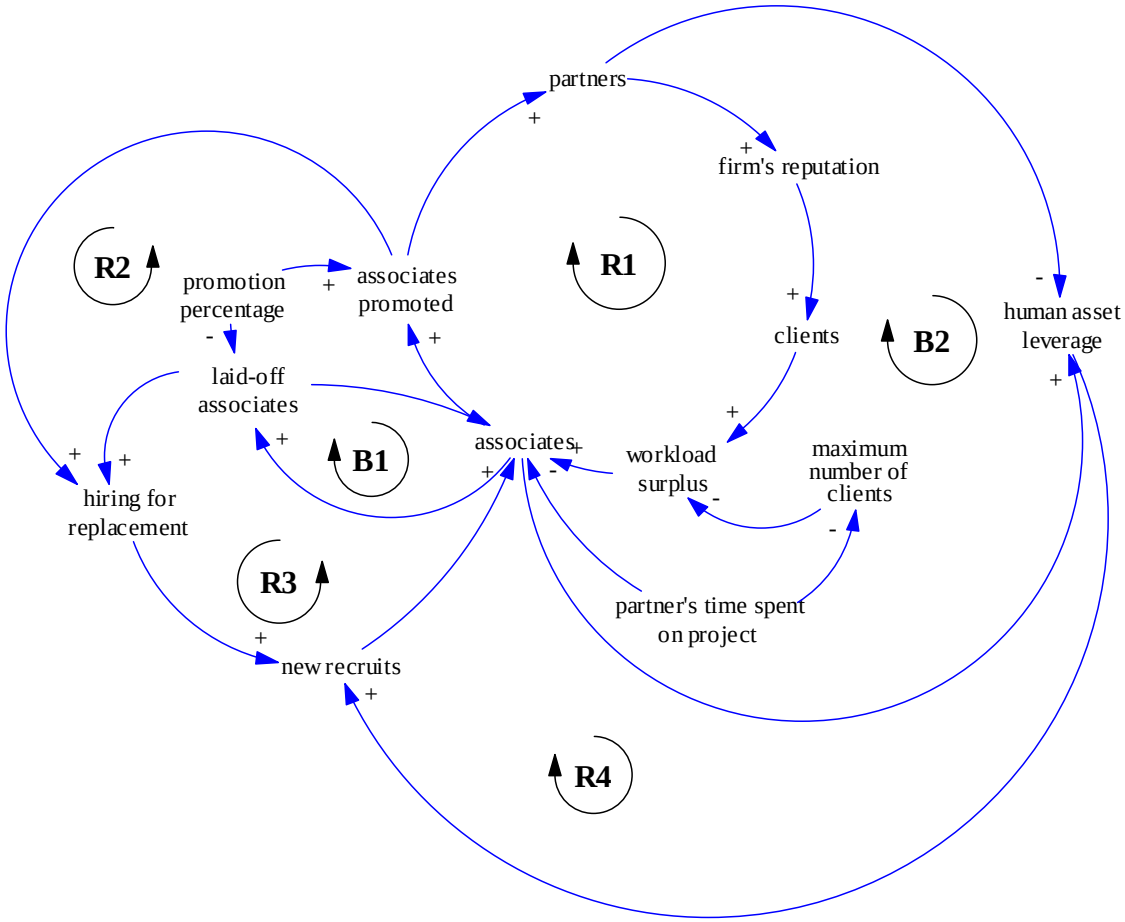


Figure 6.4: Effect of Human Asset Leverage on Growth

The dynamic behavior produced by the feedback loop presented in Figure 6.4, i.e. the overall model, is exponential growth. This pattern of growth emerges first by the operation of feedback loop R1, which governs the growth of the law firm triggered by its ability to attract clients, thanks to partners' human capital. This growth is further reinforced by the role played by the promotion percentage, which makes the stock of associates reduce after a given period of time both because part of junior attorneys get promoted and the remaining are dismissed and therefore all need to be replaced. This dynamic is represented by the joint operation of feedback loops R2 and R3. Finally, through feedback loops R4 and B2, the causal loop diagram shows the role the human asset leverage plays as a driver of growth. The combination of a reinforcing and a balancing feedback loop allows the system to attain one of the crucial aims a law firm pursues, in order to foster both its growth and its profitability, i.e. keeping its leverage ratio constant.

6.2.2 Why do specialist law firms not grow?

According to Galanter and Palay (1991), "[t]he continued existence of small firms is not inconsistent with [their] argument" (p. 108). They maintain that their model can be employed also to understand why some law firms do not manage or do not aim at growing large in size. The authors identify two typologies of small firms, alongside the large law firms. The first is a law firm, which has decided not to structure itself in the way Galanter and Palay (1991) suggest. This means that they do not have, for instance, any predetermined, constant promotion percentage or they only randomly promote associates to partnership. The second typology of small law firm, which they claim as being the most widespread, instead refers to "specialized, small firms residing in the corporate hemisphere" (Galanter and Palay, 1991: 125), which they identify as 'boutiques". These firms closely mirror the idea of specialized PSF, which Boone, *et al.* (2000) and Jaffee (2001) proposed. In fact, Galanter and Palay (1991) claim that:

> "[t]hese firms cultivate their comparative advantage in selected specialties and suppress any push to more general coverage […]. Despite their size, such firms compete with big firms for lawyers. Typically, though, the ratio of associates to partners is lower than in big firms. […] Unlike big firms, where a major part of the partners' return is from renting capital to associates, it appears that partners in boutiques increase their income by using associates and other resources to maximize return on the sale of their own time." (pp. 125, 126).

According to the authors, the main rationale explaining why these firms do not grow large in size lies in the fact that, although their partners might have a considerable human capital endowment, this shows a strong idiosyncratic nature, which therefore does not allow partners to share or to lend it to associates. This instance leads in fact to reduce the strength of the feedback loops, which define the structure of the law firm's growth model presented in Figure 6.4.

The limited likelihood of partners of boutique law firms to share their human capital with associates primarily impacts the reinforcing feedback loop identified as R1. Being unable to delegate

the resolution of the case to junior staff, partners are required to spend an important fraction of their working time following clients. As a consequence, the maximum number of clients they can take up is far less than in the case of a big law firm. in fact, the clients the boutique law firm would attract thanks to its reputation, fostered by its partners' human capital, would be limited, since the pool of potential customers, which specialized firms target is far smaller than in the case of generalist. Therefore, in absolute terms, this workload surplus will not be extremely pronounce, hence restricting the need for hiring associates. This instance is further reinforced by the fact that, given the peculiar nature of the projects, which these firms take up, partners are asked to spend a vast part of their overall working time on case resolution. As shown in the causal loop diagram, this negatively impacts on the number of associates, (s)he can sustain, since (s)he would not have enough left time to monitor their work. Therefore, the total number of associates, which a boutique law firm would employ, is far more restricted than in the case of big law firms. As a result, although this firm sets the same promotion percentage of a large, generalist law firm, the associates, who will become partners, are fewer in absolute terms. Thus, the overall strength of feedback loop R1 in the case of a boutique law firm is limited. Secondly, the number of associates awarded with partnership, and consequently those who are laid off, being smaller than in the case of a big law firm, the intensity of feedback loops R2, R3 and B1, which govern the 'hiring for replacement' mechanism, will be also less pronounced. Finally, given the inability of boutique law firms' partners to delegate cases resolution to associates, the human asset leverage ratio they would display is far lower than large law firms'. As a consequence, they would not need to recruit a wide host of associates to sustain the work of the newly promoted partners, hence holding back the force of feedback loops R4 and B1, too.

These reflections do show that Galanter and Palay's (1991) growth model can be applied to explain the limited growth of small, specialized law firms, as the authors suggest. By applying this model to the boutique practice, one can assess that even small law firms feature a pattern of (exponential) growth, being structured exactly as big law firms are. Nevertheless, given the

idiosyncratic nature of the projects, which they engage in, partners in specialized firms are unlikely to lend the resolutions of these cases to associates. Hence, they do not or cannot hire as many associates as big law firms would, thus restraining the strength of the feedback loops fostering these growth. The main consequence, which this instance leads to, is producing a pattern of exponential growth far less pronounced than the one big law firms experience.

6.3 The Growth of the Generalist and the Specialist PSFs

As already argued, on the basis of a feedback loop diagram, one is able to define the causal structure, which is responsible for the emergence of a given system's behavior. This is an extremely important exercise, thanks to which one imposes a strong logical rigor and precision on the system of verbal propositions, which a theory builds upon, and thus enhancing its explanatory power (Sastry, 1997). Nevertheless, such diagrams only define the direction and the nature of the influence between two variables, not their intensity (Harrison, *et al.* 2007.). In the causal loop diagram here presented, the causal relationships hold in the same way both in the case of a generalist and of a specialist law firm. However, the theoretical reflections previously advanced suggest that this same causal structure can produce different growth patterns, exactly because the intensity of such relations is assumed to change from one case to the other. In order to assess the validity of this suggestion, the formal model presented in Chapter 3 is once again put into motion.

The total number of employees, that is the sum of associates and partners, is the measure here employed to identify the size of a firm. As a consequence, growth is assessed in terms of net increases in the number of practitioners employed by a firm. The choice of measuring firm size in terms of total employees was made first because this is the proxy that is commonly employed in empirical investigations about PSFs' growth dynamics (cfr. Galanter and Palay, 1991; Maister, 1993; Jaffee, 2001). Therefore, this allows producing results, which are consistent with other investigations in this field, thus smoothing the process of comparing the results produced by the simulation with empirical observations. Nonetheless, the primary motivation behind this choice is the idea that

people are the very core technology of PSFs and any change in the number of people employed in such firms "track closely a […] firm's actual *scale of operations*, which measures an organization's ability to secure environmental resources and compete against other firms" (Jaffee, 2001: 124).

On the basis of the baseline simulation results presented in Chapter 4, it is possible to draw some preliminary conclusions about the different growth patterns that feature the generalist and the specialist practice in professional service industries. As suggested in the literature, the primary difference between the two typologies of firms lies in the fact that the generalist PSF would engage in recurrent, fairly standardized projects, which allow a considerable part of the engagement to be delegated to associates, while the projects, which specialist firms undertake, are excessively technical and too complex to be handled by limitedly-experienced practitioners (Maister, 1993; Sherer, 1995; Jaffee, 2001). Therefore, the reputation of a partner being equal, a PSF might experience a more or less pronounced growth pattern depending on the likelihood of delegating the accomplishment of such engagements to other employees. The more "delegable" projects are, the higher the need to employ junior staff, in order to maximize the "production function". This positive relationship between the ability to delegate project accomplishment and growth is effectively reproduced in Figures 4.3 a and b, which show that the generalist firm experiences a far more rapid and pronounced growth than the specialist.

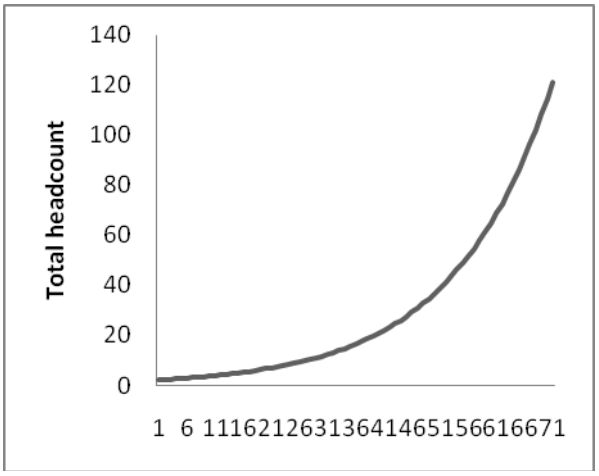


Figure 4.3a: Total headcount (generalist)

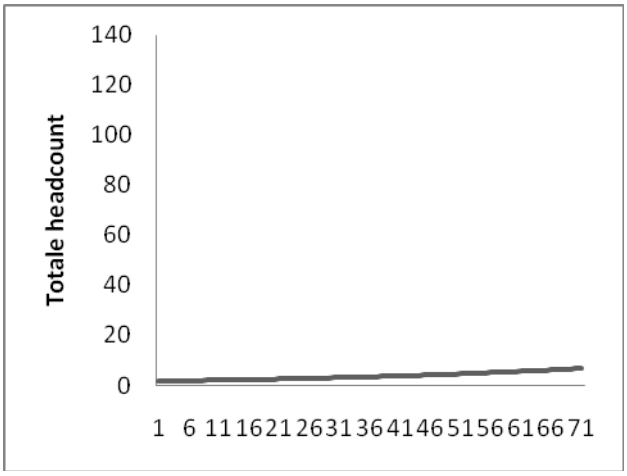


Figure 4.3b: Total headcount (specialist)

These results do show that, although the positive feedback loop denoted as R1 in Figure 6.4 produces a pattern of exponential growth for both types of firms, the constraint given by the ability of partners to delegate the project accomplishment to associates (i.e. "partners time on project"), makes such exponential growth differ between the two organization types. The direct consequence of this discrepancy is that the human asset leverage would be much higher for generalist than for specialist firms, as showed in Figures 4.2 a and b. The value of the leverage determines the absolute number of associates, which the firm will employ, given the total number of partners. Naturally, the higher this ratio is, the higher the number of new recruits will be, as described in the feedback loop diagram in Figure 6.4. The high leverage structure of generalist PSFs therefore further contributes to speed their growth pace, while the low leverage ratio of specialists explains why they tend to remain small. The simulation results presented in Chapter 4 do therefore provide support for Galanter and Palay's (1991) growth model and do find a tight connection with the empirical results, which the two authors show in their work on NY big law firms, which are reproduced in Appendix 1 of this chapter.

6.4 The Growth of the Generalist and the Specialist PSFs: Experiments

In order to provide further support to Galanter and Palay's (1991) thesis, some experiments have been conducted to assess to what extent the model is sensitive to changes in the structure of project accomplishment, i.e. the share of junior and senior staff in case settlements. In order to conduct such experiments, the value of the "partners' time on project", which consequently defines the value of "associates' time on project" (see equation [7]), was deterministically changed. The results here reported concern two extreme cases. The first case concerns a generalist PSF, whose partners spend on project accomplishment the same share of time, which a specialist PSF's partner would devote in typical circumstances (partners' time on project = 70 hours). The second case portrays the reverse situation, whereby a specialist PSF partners is involved in case resolution for the same amount of time of a generalist PSF partner (partners' time on project = 30 hours).

Figure 6.5 shows the simulations results of the first experiment, i.e. a generalist PSF, the partners of which decide to take up the most part of a project's accomplishment.

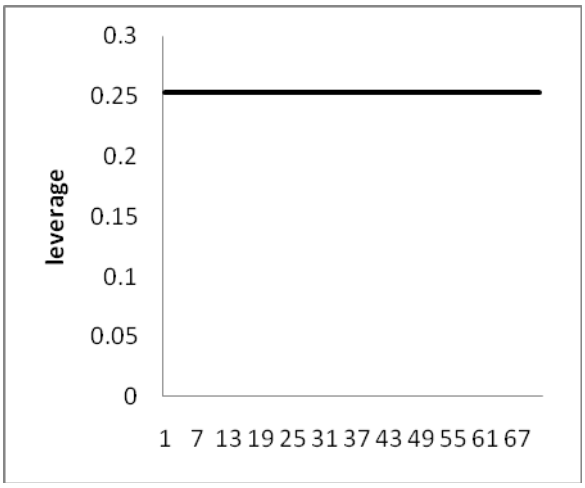


Figure 6.5a: Leverage ratio

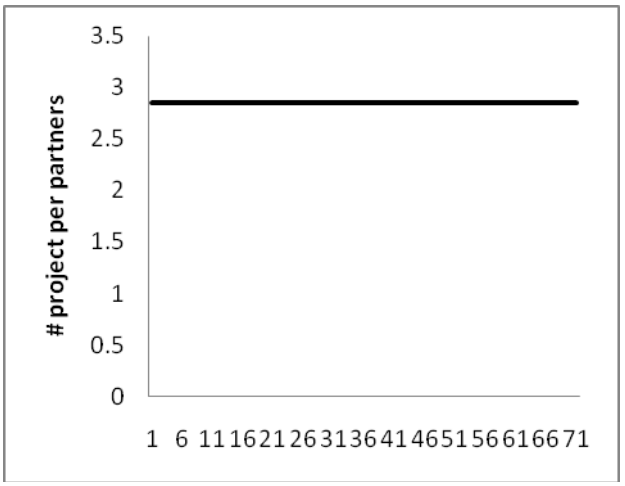


Figure 6.5b: number of projects per partner

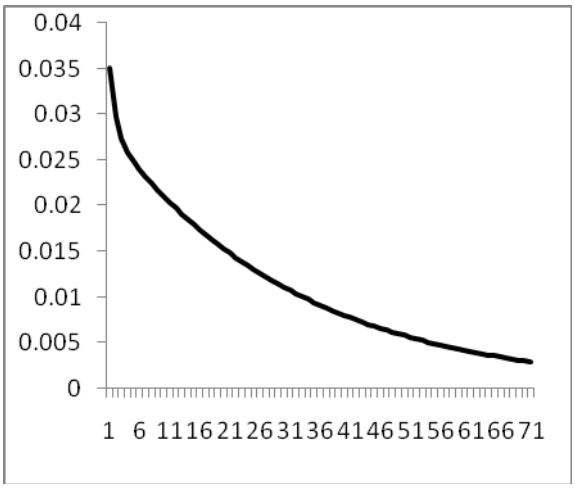


Figure 6.5c: Hiring

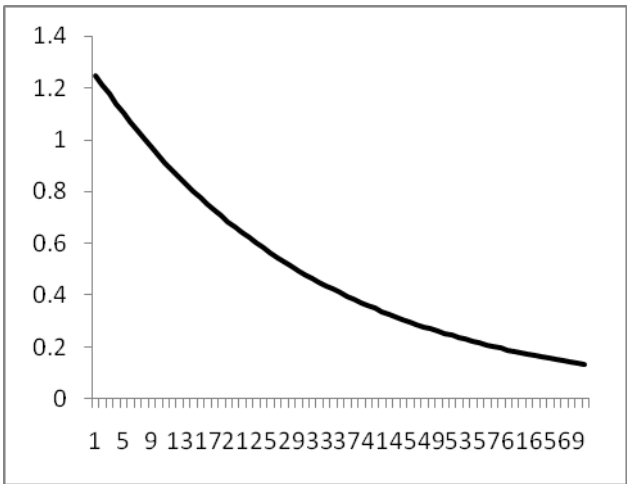


Figure 6.5d: Total headcount

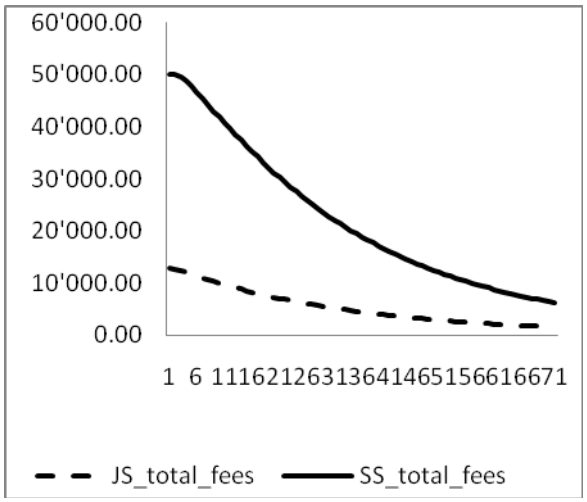


Figure 6.5e: Sources of Revenues

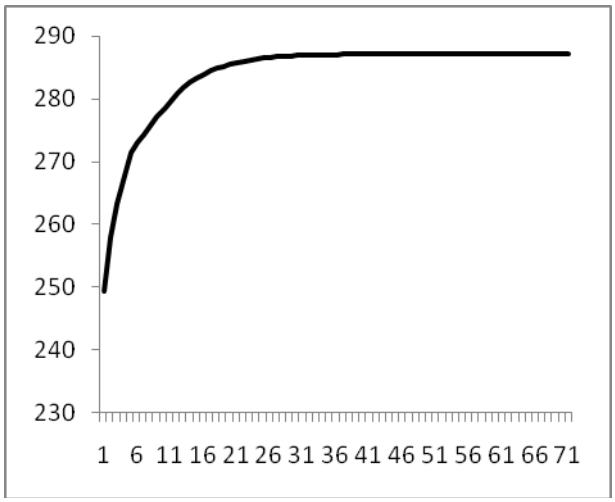


Figure 6.5f: Partners' billing rate

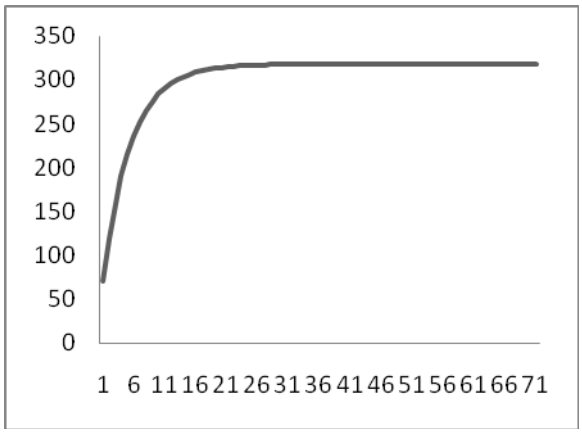


Figure 6.5g: Knowledge per partner

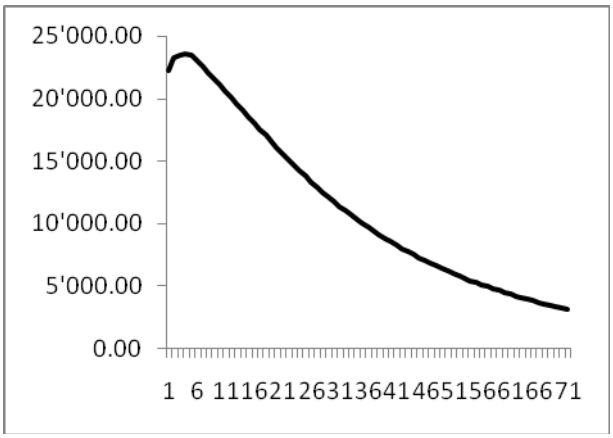


Figure 6.5h: Profits

The major consequence of this decision concerns the leverage structure of the firm. As showed in Figure 6.5a, the leverage ratio sets at a far lower level than before (cfr. Figure 4.2a). This occurs first because, as partners are more involved in case resolution, they can supervise only a limited number of projects (Figure 6.5b), hence reducing the overall need for support from other practitioners. Moreover, since junior staff is asked to spend only a limited share of time on cases, each single associate employed in the firm can be appointed to a wider number of project, which further reduces the need for new employees. As one can easily envision, the hiring flow is quite low and reduces over time (Figure 6.5c) and, as a consequence, the overall number of people employed in the firm sharply declines, instead of growing exponentially (Figure 6.5d).

Being unable to grow large in size leads detrimental to consequences for the economics of this anomalous generalist PSF. First, the revenue-generating power of associates, which is at the root of generalist PSFs' profitability (cfr. Figure 4.7a), is in this case almost negligible (Figure 6.5e) and, even though partners are more involved in case settlement, the revenues, which they can generate, show a marked declining trend. This occurs despite of the rise of partners billing rates (Figure 6.5f) fostered by the higher level of knowledge each partner possesses (Figure 6.5g). One could regard this situation as valuably compensating the minimal contribution to revenue generation of associates. Nevertheless, this strategy, which effectively applies to specialist PSFs, does not have any beneficial effect in the case, since the firm still has a generalist posture towards the client marketplace, i.e. it takes up fairly standardized projects, which clients are unlikely or unwilling to pay over market standards. The direct consequence of this situation is, therefore, a marked decline of the profit curve (Figure 6.5h), which is triggered by the fact that the firm incurred in what Maister (1993) and Løwendahl (2005) identify as the "underdelegation problem", that is an instance where a partner does not delegate the accomplishment of routine, standardized cases to junior staff, who would be able to carry it out with the same level of service quality, but at a far lower cost, which would therefore positively impact on the overall economics of the firm.

Figure 6.6 shows, instead, the simulation results of the second experiment, showing a specialist PSF, whose partners decide to delegate a major part of project accomplishment to associates.

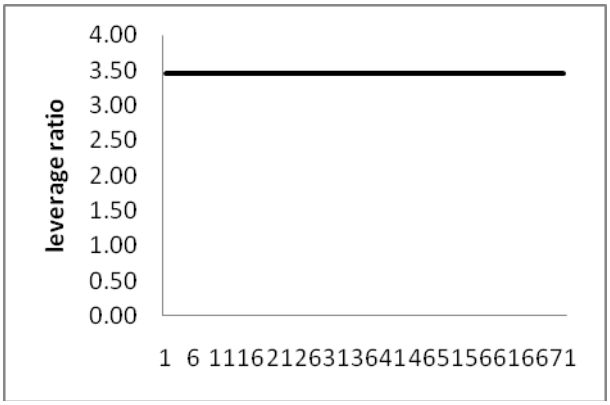


Figure 6.6a: Leverage ratio

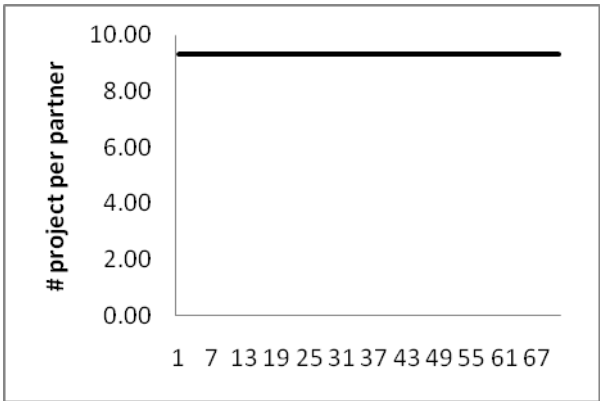


Figure 6.6b: number of project per partner

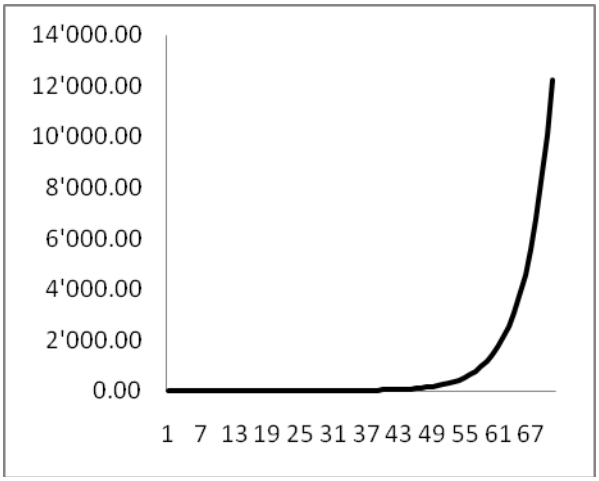


Figure 6.6c: Hiring

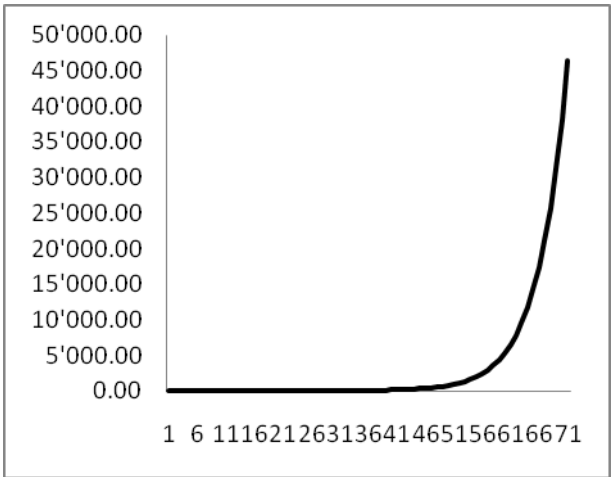


Figure 6.6d: Total headcount

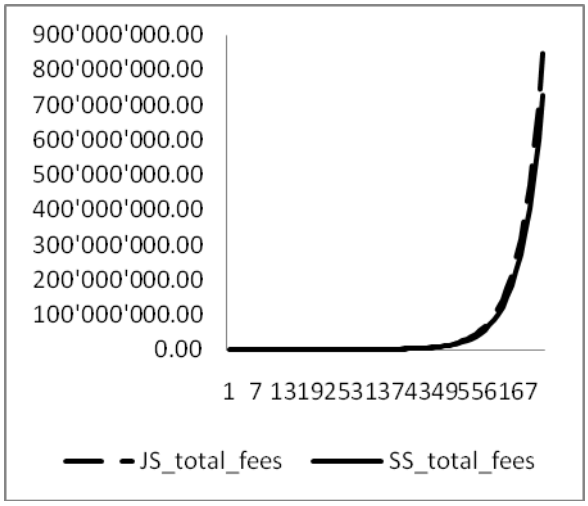


Figure 6.6e: Sources of Revenues

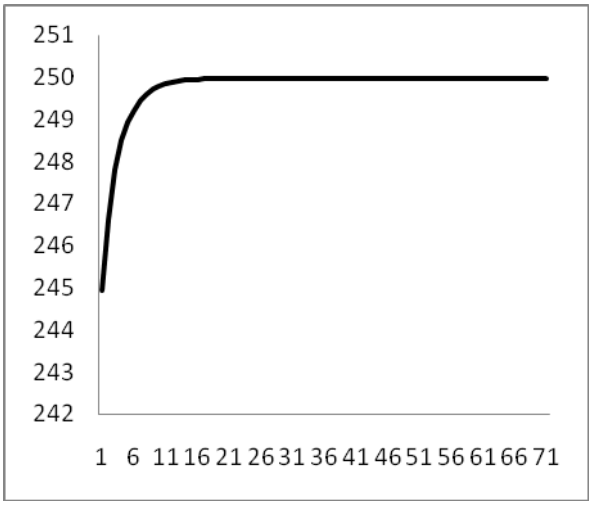


Figure 6.6f: Partners' billin rate

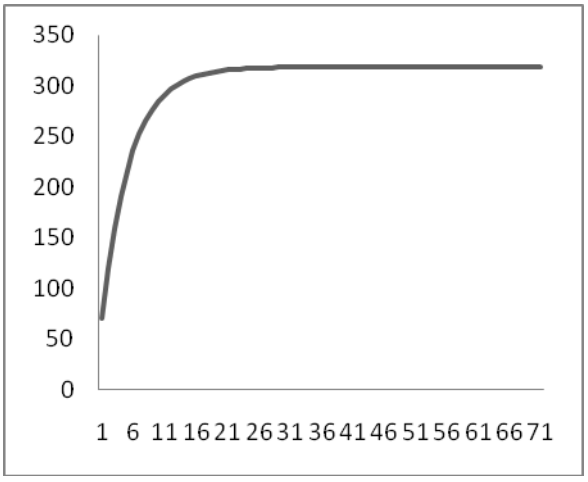


Figure 6.6g: Knowledge per partner

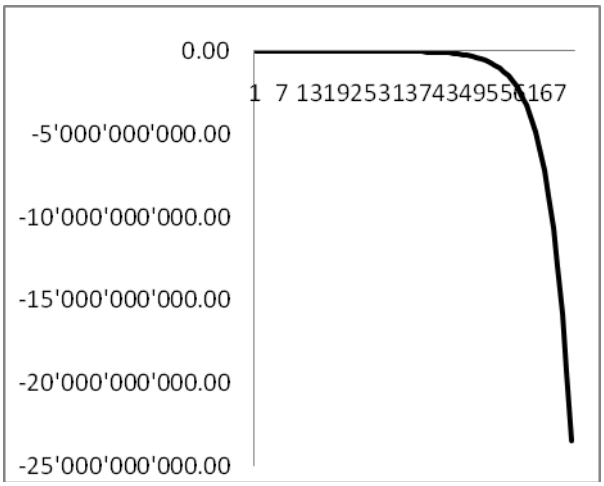


Figure 6.6h: Profits

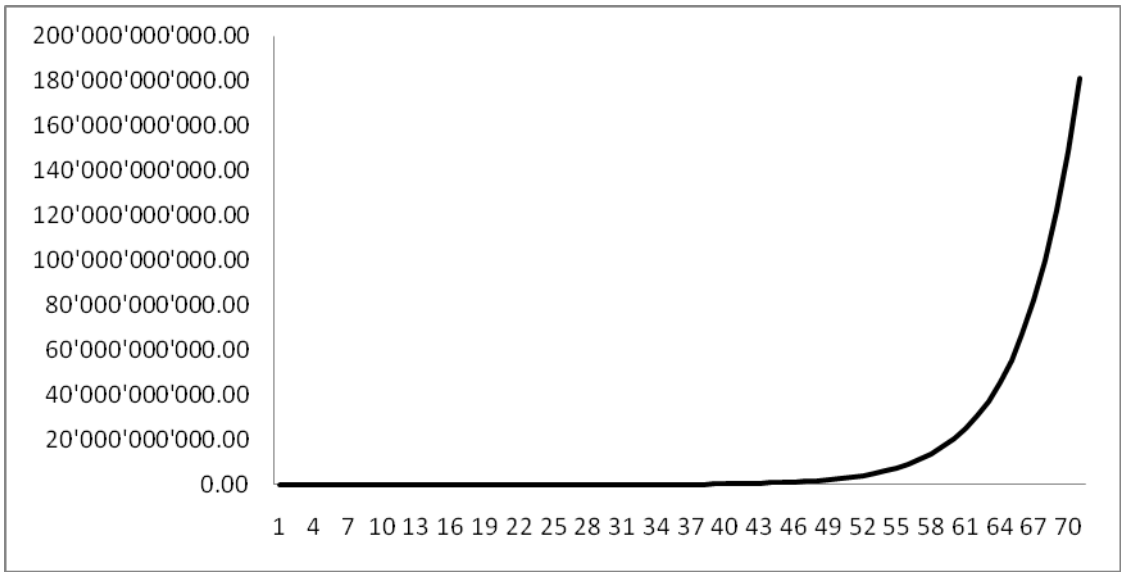


Figure 6.6i: Expenses

In this case, the leverage ratio sets at a considerably higher level (Figure 6.6a) than in the baseline case (cfr. Figure 4.2b). This occurs because the number of projects, which a partner can now supervise is quite vast (Figure 6.6b), and therefore each partner needs a wider host of associates to effectively accomplish them. Moreover because each single associate is more involved in case resolution, (s)he cannot be appointed to many projects at the same time. Therefore, in order to fulfill its workforce needs, the firm needs to recruit people from the market, which explains the intensification of the hiring flow (Figure 6.6c), which consequently makes the overall number of people employed in the firm exponentially grow at a very fast pace (Figure 6.6d).

Such extraordinary growth does not, however, lead any substantial benefit to the economics of this firm. On the one hand, partners cannot benefit from any "specialization premium price" anymore and therefore they are unable to set their fees over market standards (Figure 6.6f), since the knowledge each partner possesses is now very limited (Figure 6.6g). At the same time, however, the firm appears to benefit from the massive revenue generating power of both associates and partners (Figure 6.6e), which can be deemed as effectively compensating the inability of partners to increase their fee levels. Nevertheless, the profit curve never reaches positive values and

exponentially declines (Figure 6.6h). How could this be possible? Why the conspicuous revenues generated by both associates and partners are unable to foster profitability? The answer is to be found in the trend, which the "Expenses" curve (Figure 6.6i) follows in comparison to the trend of the "Total Revenues" curve (Figure 6.6e). Although both curves evolve in the same way, expenses slightly exceed revenues, thus obviously leading to a dip in profits. This circumstance can be explained by the fact that the firm features an internal demographic structure, which is excessively heavy, thus making the level of expenses (i.e. associates' salaries plus overheads) rise. Such firm is noticeably "out-of-shape" (Maister, 1993), since too many associates have been appointed to carry out engagements, which only highly-experienced practitioners, namely partners, are able to effectively accomplish. As a consequence, one can easily imagine that the quality of the service such a firm would provide to its clients would be inadequate to fully meet their expectations.

Although the simulation results show a rather unrealistic behavior, given by the fact that these experiments pushed any logic behind the rationale arrangement of PSFs' internal processes and structures to the extreme, they allow to highlight that the time a partner spends in case resolution plays a crucial role in shaping the growth trajectories, which a generalist or a specialist PSF might follow, as it was already showed in the baseline results presented in Chapter 4. This variable does represent the key factor regulating the intensity of the core feedback loop of the model presented in Figure 6.4, i.e. the feedback loop denoted as R1[3]. Thanks to the simulation results here presented, it has been possible to observe that, although this positive feedback sustains the growth patterns of both the generalist and the specialist PSF, the likelihood of a partner to delegate the execution of her/his engagements to associates influences its strength.

[3] The other variable, which was suggested to play a role in shaping the growth patterns of the generalist and the specialist PSF, according to the feedback loop model presented in Figure 6.4, is the "promotion percentage". Nevertheless, any change in the value of such variable only slightly smoothed the results produced by the modification of the "partners' time on project" variable. This led to conclude that the very core regulator of the growth patterns of these firms is indeed the structure of project accomplishment. For this reason, only the simulations results relating to this variable have been presented.

6.4 Summary

Why do generalist organizations tend to grow large in size, while specialist tend to remain small? Although this pattern of size distribution in partitioned industries has been widely observed in a variety of contexts, a thorough explanation for this occurrence has not been effectively advanced.

In line with the core character of the whole research, such investigation has focused on which *internal* mechanisms or processes might play a role in fostering or restraining the growth dynamics of the generalist and the specialist organization in professional service industries. The reference theoretical model here considered is the "Tournament of Lawyers" by Galanter and Palay (1991), which provides a strong empirical supported description of the internal organizational variables that are responsible for the different growth patterns, defined in terms of net changes in the number of people employed, featuring the "big" and the "small" law firms. Two factors are suggested by the authors as being primarily responsible for this difference. On the one hand is the level of *human capital* of partners. As the authors suggest, the more human capital a partner has been able to develop, the more clients (s)he will be able to attract. Nonetheless, a partner cannot accept an indefinite number of new clients, because of the natural constraint given by the number of hours, which (s)he can devote to work activities. Therefore, a partner might experience a situation of surplus labor, or "surplus human capital", as Galanter and Palay (1991) define it, that can be effectively overcome by 'sharing' these clients with other practitioners. These last are typically "just out-of-school attorneys" (Galanter and Palay, 1991: 90), who have not developed enough human capital to attract clients on their own, but have a full labor availability. By combining the human capital provided by partners with the labor supplied by associates, the firm can effectively maximize its production function, hence fostering its profitability. At the same time, however, a partner cannot hire an indefinite number of new associates, since her/his ability to share a project with them depends on the likelihood of delegating case accomplishment. A project can be in fact regarded as featuring a rather standardized component, which associates can effectively handle, and a more

complex, diagnosis-intensive, possibly creative one, which only highly-experienced practitioners (i.e. partners) can effectively deal with (Maister, 1993). Therefore, although a partner might experience a situation of surplus human capital, it might be impossible for her/him to share case accomplishment with associates, simply because the diagnosis component of the projects, which (s)he engages in, sharply overwhelms their standardized elements.

These two counteracting forces, i.e. human capital, on the one hand, and the likelihood of delegating case accomplishment, on the other, contribute to define the most crucial variable governing the internal organization of PSFs, i.e. the human asset leverage. As Galanter and Palay (1991) themselves claim, "[t]he number of associates per partner that a firm can hire depends upon two factors: the monitoring resources of the firm [*i.e. the ability to delegate case resolution to* associates] and the amount of human capital each partner in the firm possesses." (p. 105). The role, which this variable plays in fostering the profitability of PSFs has been already presented in the preceding chapters. This last chapter revealed, however, another important influence that this factor exerts on PSFs' organization: it regulates the growth pattern, which these firms can experience. As Galanter and Palay (1991) asserts, "for a specific number of partners in a particular year, the associate-to-partners ratio will determine the absolute number of associates the firm will employ"(p. 118). Together, the number of partners and associates employed by a PSF defines its size (Galanter and Palay, 1991; Maister, 1993; Jaffee, 2001) and, being people and their human capital the very core technology, which such firms avail themselves of, the ability to employ a wide number of practitioners can be regarded as a valuable proxy of the resources, which a firm can acquire, in terms of clients (Jaffee, 2001). To sum up, thanks to the simulation model here developed and to the experiments performed with it, the centrality of the leverage ratio in explaining the different growth patterns featuring the generalist and the specialist PSFs has been suggested. Nonetheless, in order to have a full verification of the plausibility of this suggestion, an empirical confirmation is needed. This will help understanding not only how the leverage ratio operates in fostering the growth pace of

generalist PSFs, as Galanter and Palay (1991) have already showed, but also how it works in specialist firms.

These results are, however, strictly contingent to the field of PSFs. In order to have a more extensive, and maybe more profound, understanding of what forces stand behind the different size distribution featuring partitioned industries, the explorative path followed in this research might be applied also to other industries. In this way, it would be possible to obtain results, which could subsequently be compared in a cross-sectional way, thus maybe revealing important relationship between the internal organization of the specialist and the generalist organizational forms and their growth behavior.

Conclusions

What are the forces that stand behind the emergence, evolution and persistence of organizational diversity in given industries? “Why are there so many kinds of organizations?” (Hannan and Freeman, 1977: 936). Such questions have attracted a great deal of attention among scholars in a wide array of managerial and sociological fields. One of the most developed and comprehensive theories on organizational diversity can be found in resource partitioning (Carroll, 1985). The major insight, which this theory has offered, is uncovering and providing a theoretical explanation for the paradoxical proliferation of specialist organizations in highly concentrated markets, i.e. where a handful of large (generalist) organizations control almost the entirety of available resources. Yet, one might wonder how this industrial pattern emerges and why the strict bifurcation between generalists at the industry core and specialists at its edge persists over time, once attained. Resource partitioning theory provides only limited suggestions in this sense. It maintains that, under given conditions (e.g. scale-based competition, size-localized competition), an industry might feature such configuration and, in order to survive, generalist and specialist organizations must remain in their competitive arena and avoid entering into direct competition. However, how can an organization evolve towards generalism or specialism and why would or could a generalist not become a specialist or vice versa? Moreover, why would a generalist feature a more pronounced growth pattern than a specialist organization would?

This research has attempted to provide an answer to these questions, by complementing resource partitioning analyses with reflections concerning the internal organization and operation of generalist and specialist organizations. This research analyses which organizational and managerial processes might account for the emergence of either the generalist or the specialist form and the extent such organizational and strategic traits display a character of path-dependency, which inhibit any alteration of these firms’ strategic position. In addition, still by drawing upon the analysis of

internal organizational dynamics, the research here presented has attempted to provide a tentative explanation of the different growth patterns characterizing the generalist and the specialist organizations in partitioned industries.

The propositions here advanced focused on the analysis of a specific kind of firms, which in the last decades have received a great deal of attention, i.e. Professional Service Firms. "Organizational forms and change have been central themes of research on professional service organizations for over 50 years" (Malhotra, *et al.*, 2006: 171). The main limitation of many studies on PSFs resides on their sheer focus on the investigation of large and successful firms, thus providing insights that can hardly explain the profound organizational diversity featuring professional industries (Malhotra, *et al.,* 2006; Løwendahl, 2005). Drawing upon the generalist – specialist distinction, Boone, *et al.* (2000) and Jaffee (2001) suggested that the paradoxical coexistence of many specialized firms and generalist organizations in these industries occurs because these two types of firms target different types of clients, hence providing different types of services, or possibly the same service, but with different levels of customization. If, on the one hand, these reflections provide helpful insights on how PSFs' industries operate, they lack, on the other hand, to provide suggestions on how these two typologies of firms emerge and evolve and, moreover, they offer little indication on the factors, which contribute to the persistence of such industrial configuration.

In order to advance propositions on the role, which the internal organizational dynamics of the generalist and the specialist PSFs play in shaping the evolution of a partitioned industry, a dynamic simulation model representing the internal organizational dynamics featuring law firms was developed. As Harrison and Carroll (2006) suggest:

> "[c]omputer simulations seem to be especially helpful in studying the behavior of complex systems, or systems composed of multiple interdependent processes. In such systems, each of the individual processes may be simple and straightforward, and each may be well understood from previous research or at least well supported theoretically. But the outcomes of the interactions of the processes may be far from obvious, especially over time. Simulation enables

> the systematic examination of the simultaneous operation of these processes in a specified theoretical model over time." (p. 35).

The development of this simulation model heavily relied upon prior theoretical contributions concerning the internal structures and processes of generalist and specialist PSFs. In particular, four major elements were taken into account, i.e. the business orientation, the HRM system, knowledge, and the 'economics' system, the joint combination of which produced the results, which the findings of this research are based upon.

Main Findings

How do organizations become generalist or specialist?

By reviewing the major theoretical contributions to the study of PSFs (e.g. Maister, 1993; Løwendahl, 2005), it was possible to assess that generalist PSFs' profitability primarily originates from the efforts of junior staff. Given the standardized nature of the projects they undertake, these firms can engage in a broad number of projects, much of which can be effectively conducted by associates. Therefore, the more associates a generalist PSF employs, the more sources of revenues it can benefit from (Maister, 1993). Hence, if a PSF decides to take up a generalist strategic orientation, it should devote a conspicuous share of its resources to recruit and train junior staff. On the other hand, the idiosyncratic nature of the projects specialist PSFs undertake prevents them from benefiting of the efforts of junior staff. To carry out their engagements, specialists require a high involvement of partners, being the only, who possess the skills and knowledge, which allow the effective accomplishment of the projects (Maister, 1993). It is therefore thanks to the knowledge and skills endowment of partners that specialist PSFs can foster their profitability, thanks to which they can benefit from a 'specialization premium price', which their clients are likely and willing to pay for (Sherer, 1995). As a consequence, a PSF adopting a specialist strategic orientation should devote its resources to cultivate the development of partners' knowledge, rather than to hiring associates.

The simulation results do replicate these instances, showing the centrality of associates in fostering generalists PSFs' profitability, and of partners' specialized knowledge, for specialists. More than just replicating the behavior suggested by the literature about generalist and specialist PSFs, this simulation effort allowed assessing which internal organizational structures and processes are at the roots of such profoundly different patterns of behavior. Moreover, the results produced by the simulation model highlight that, alongside pure industrial variables, the founding and evolution of a particular typology of organization (in this case the generalist and the specialist) rests to a large extent on the individual activity of resource mobilization (Lomi, Larsen, and Wezel, 2006).

Why would/could a specialist not become a generalist or vice versa?

For an industry to become partitioned, some conditions must hold, among which "the assumption that organizations are not fully pliable and cannot change strategies instantaneously or even regularly, […] the assumption that chosen organizational strategies constrain the options and activities available to an organization" (Carroll, 1985: 1272). In the original formulation of this theory, this assumption has never been directly tested, at least to my knowledge and understanding. This has occurred mainly because, by choosing an aggregate level of analysis, resource partitioning theory did not straightforwardly investigated what mechanisms and processes within the boundaries of the generalist and the specialist organization would account in making them being unable to alter their strategic positioning.

This research has attempted to fill this gap and showed that the initial investment decision of these firms, which points towards hiring a large number of associates, in the case of generalist PSFs, or to develop specialized knowledge, in the case of specialists, features a significant path-dependent character. As a consequence, the reliance of a PSF on one of the two alternative strategic resources (associates vs. specialized knowledge) would strengthen, thus making any change in the strategic orientation of these firms hard to be accomplished and very likely to make the firm fail. Thanks to the

simulation model developed to conduct this research, it has been possible to provide support to this suggestion, by showing that although an organization attempting to modify its strategic orientation (in this case moving from generalism to specialism and vice versa) manages to properly modify its internal structures and processes, it is not able to sustain its profitability, at least in the short run.

Why should generalists grow large in size, while specialists remain small?

One of the main empirical findings advanced by resource partitioning theory is the observation that generalist organizations are likely to grow large in size, while specialists tend to remain small (Carroll, 1985; Carroll and Hannan, 2000). The emergence of this strict bimodal size distribution has not, however, been thoroughly explained (cfr. Jaffee, 2001). In line with the core character of the whole research, even in this case the investigation has focused on which *internal* mechanisms or processes might play a role in fostering or restraining the growth dynamics of the generalist and the specialist organization in professional service industries. The simulation model allowed to show the centrality of the leverage ratio in explaining the different growth patterns featuring the generalist and the specialist PSFs has been suggested, with organizations featuring a higher leverage (namely generalists) featuring a more pronounced growth pattern than companies with a more restrained associates-to-partner ratio, i.e. specialists.

Limitations and Future Researches

The results presented in this dissertation have a number of limitations, which can be divided into two separate groups. The first set of limitations deals with the focus, which I intended to give to the whole research. As it was frequently stated, the ultimate aim of the research I conducted is complementing the population level explanations advanced by resource partitioning theory (Carroll, 1984) for the emergence of organizational diversity in given industries with an investigation of the internal organizational processes and mechanisms featuring the two alternative organizational forms, which this theory identified, i.e. generalists and specialists. In order to have a full and specific

understanding of the functioning of the internal organizational dynamics of these organizational forms, a crucial choice was made, i.e. any environmental variable was left out of the analysis. This allowed, on the one hand, to produce results, which effectively supported the reference theoretical suggestions. Nonetheless, the exclusion of environmental factors from the analysis prevented these results from being fully realistic. This is remarkably evident in Chapter 6, where the dynamics of growth were analyzed. The simulation results showed that the two organization types experienced a pattern of exponential growth. This is in complete accordance with the behavior observed by Galanter and Palay (1991) and with the theoretical suggestions advanced by Maister (1993). However, as the authors themselves state, this behavior is unrealistic, since it is unlikely to observe a pattern of exponential growth, which persists indefinitely (Galanter and Palay, 1991). Limits to growth do exist and are mainly linked to the effect exerted by environmental variables like competitors, customers or a shortage in the availability of new people to hire (Galanter and Palay, 1991). By choosing to focus solely on the analysis of the generalist and the specialist' PSF internal dynamics, it has been possible to effectively replicate the behavior suggested by such theoretical framework and understand which structures give rise to such patterns. Nonetheless, further research is needed to effectively link the micro analysis I conducted with environmental phenomena, thus obtaining a thorough view of the emergence of organizational diversity arising from the influence of both entrepreneurial and industrial variables.

Another important limitation concerns the sheer focus on professional service industries, which advances questions on the generalizability of the outcomes even to other industrial settings. Even in this case, this limitation is particularly evident in Chapter 6, where the explanation of the different growth patterns of the generalist and the specialist firms is highly context specific. In fact, having identified in human asset leverage the crucial variable regulating the growth pace of the generalist and the specialist PSF does not represent a generalizable conclusion. It would therefore be advantageous to replicate the analysis here applied to the specific context of PSFs even to other

industrial setting, as for example to those industries where the dynamics of growth under resource partitioning have been already analyzed, e.g. American R&D consortia (Barnett, Mischke, and Ocasio, 2000), generalist and specialist Viennese newspapers (Barnett and Woywode, 2001), and Minnesota generalist and specialist non-profit organizations (Galaskiewicz *et al.*, 2001). This exercise would possibly uncover common patters, which would reinforce the plausibility of the results here presented.

The second set of limitations deals with the methodological decision of using SD simulation. Those limitations include the method itself. The aggregate nature of the results produced, does not provide any insight into the behavior of single individuals in the firms that were modeled. Also method used to model theories makes validation problems particularly important. Unlike models of historically determined processes, which can be considered valid when they are able to extract patterns from historical data, models of theories or 'second-order models' (Larsen and Lomi, 2002: 285) should be able to reconstruct suggestions about possible relationships among variables to produce results, which are consistent with real-world phenomena. This test of external consistency is to a large extent left unresolved in this research. Nevertheless, drawing upon the idea that "[t]he quality and validity of second-order models depend more on the type of questions that they make possible and the quality of inquiry they promote, than on the answers they provide or their ability to track historical data" (Larsen and Lomi, 2002: 285), the results produced by the simulation model can be regarded as a starting point for the development of a more realistic – maybe bigger - formal dynamic simulation model, which will be then used to derive hypotheses that might lend themselves to eventual empirical testing.

Appendix

A.1 Introduction

The research here developed and presented builds upon one core, basic assumption: in order to have a thorough overview of the dynamics featuring an industry at the aggregate level, one cannot merely refer to the investigation of industrial-level forces, but the efforts of individual, entrepreneurial decisions need to be analyzed, too (Amit and Shoemaker, 1993, Teece, *et al.*, 1997; Ocasio and Joseph, 2005, Lomi, Larsen and Wezel, 2006). On the basis of this assumption, this research has attempted to shed a light and refine one of the most prominent theories in the landscape of organizational and sociological theories, i.e. resource partitioning theory (Carroll, 1985). This theory, which provides one of the most comprehensive explanations for the emergence of organizational diversity in given industries, suffers however from a notable bias. It bases its results almost solely on the analysis of industrial factors, thus leaving aside any investigation of the role played by entrepreneurial decisions in shaping the organizations, which populate such industries.

This research has attempted to overcome this gap by complementing industry-level explanations of organizational diversity put forward by resource partitioning theory with an analysis of the internal processes featuring generalist and specialist firms' practices. By focusing solely on the investigation of internal organizational dynamics, the results produced are free from any influence or bias exerted by environmental factors, thus gaining a thorough insight on what occurs within the boundaries of the specialist and the generalist PSF forms. Nonetheless, this choice also made some variables to possibly behave in a rather unrealistic way. The aim of this appendix is to overcome this limit, by including in the simulation model a new sector representing the client marketplace, which PSFs are confronted to, thus allowing to review the simulation results in a more realistic way and provide a tentative bridge between the micro- and a macro-organizational lines of enquiry.

A.2 The Client Marketplace of Professional Service Industries

This section of the model describes the environment, which PSFs are confronted to. As it was extensively suggested, professional service industries feature acute organizational diversity (Masiter, 1993; Boone, *et al.*, 2000; Jaffee, 2001; Løwendahl, 2005, Malhotra, *et al.*, 2006). On the one hand, there are generalist PSFs, which provide fairly standardized services, that allow them to exploit scale economies, which are passed down to clients with lower fees. On the other hand, there are specialist PSFs, offering highly personalized services, involving a lot of partners' human capital, which make the fees these firms apply rise.

The heterogeneity featuring professional service markets does not only characterize the supply side. The existence of diverse PSFs, here identified as generalists and specialists, is coupled with the existence of different market segments, which these firms decide to target. Professional service industries are in fact composed of different types of clients, who have different needs with reference to the characteristics of the service, which they ask for. The market for professional services shows heterogeneity therefore also from the demand side (Maister, 1993: Løwendahl, 2005). According to Maister (1993), the overall group of PSFs' clients is part of a continuum with two extremes: Brains and Procedure clients. The first have problems at the forefront of the professional or technical knowledge, or at least of extreme complexity. The second are clients, whose problems are well-recognized and familiar. In the first case, the procedures to solve such problems are highly customized, while in the second case they are highly programmatic. Moreover, in the first case, clients are suggested to be far less fee sensitive than in the second case. Finally, the pool of potential customers in the second case is generally larger than in the first.

How do clients choose? First, clients choose on the basis of the ability of the firm to tailor the service provided to their needs. In general, the more complex a client's problem is, the more pronounced the quest for service personalization will be (Maister, 1993). Given this, however, the rising heterogeneity featuring professional service industries both from the supply and the demand

side, makes the fees, which practitioners apply for the provision of their services, play a central role in making clients choose among different firms (Karpik, 1991). As Karpik (1991) maintains, for some classes of clients' issues, production tends to be standardized and the client her/himself tends to consider her/his matter as one of the many cases, which tend to have a rather prototypical solution. The impersonality of the supply and of the demand emerges from the standardized treatment of simple cases, which features a high level of simplification and efficiency[4]. These clients can easily be identified with Procedure clients, which are usually extremely fee sensitive (Maister, 1993). On the other hand, those clients with more complex, technical problems, namely Brain clients (Maister, 1993), are far less sensitive, since they are more interested in obtaining a service, which thoroughly meets their needs and expectations (Maister, 1993). For such clients, fees do not merely have a material meaning, but they are an indication of the professional value of the person, who provides a service (Karpik, 1991).

A.3 Re-defining the Formal Model

The formalization of the above-presented reflections about the client marketplace, which PSFs are confronted to, essentially consists in the definition of a demand curve for professional services, with on the horizontal axis the partners' billing rate (see equation [21] – Chapter 3) and on the vertical axis the number of clients that can be acquired at any fee level. The demand curve was formalized using a graphical converter. The shape of the curve is portrayed in Figure A.1, which for sake of simplicity was set as linear.

[4] "[per] certe classi di servizi […] la produzione diviene standardizzata ed il cliente tende a considerare la propria controversia come uno dei tanti casi che fanno parti di una classe di conflitti tutti regolati da norme e soluzioni identiche. L'impersonalità dell'offerta e della domanda […] scaturiscono essenzialmente dal trattamento di massa dei dossier semplici che generano con la loro ripetitività o con la ricerca dell'efficienza la semplificazione e standardizzazione delle pratiche" (Karpik, 1991: 50).

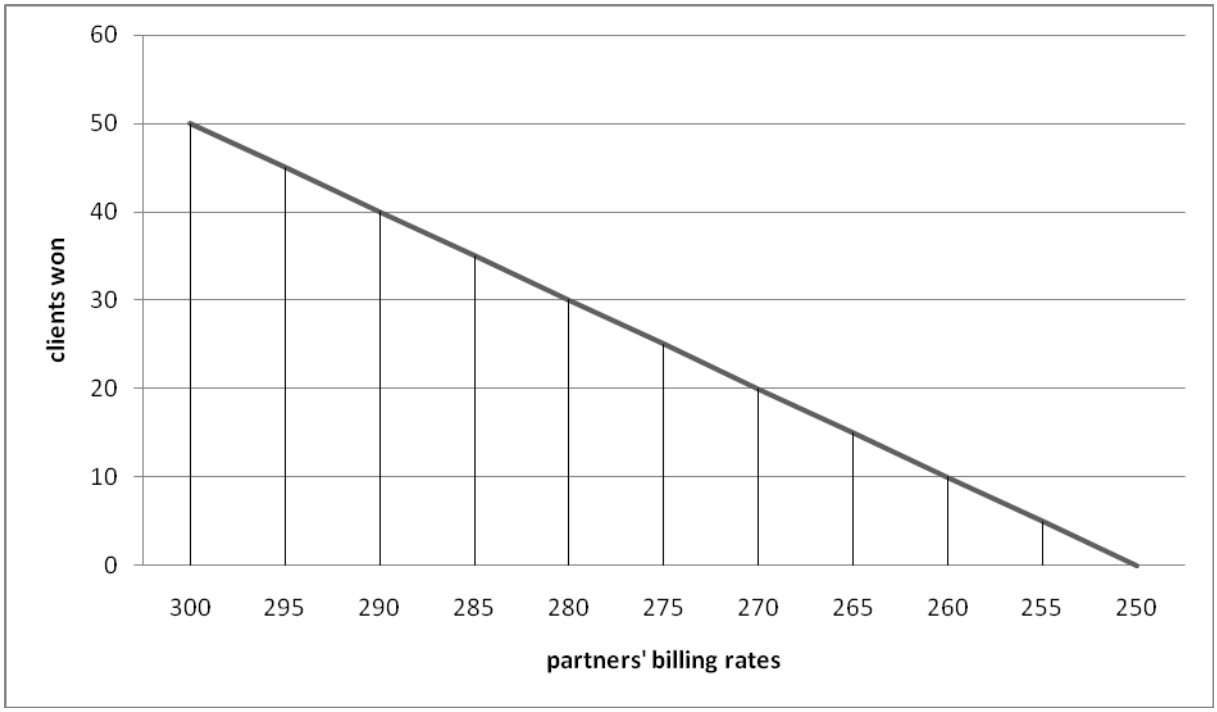


Figure A.1: Effect of Partners' Billing Rates on Number of Clients won

The demand curve defines the number of clients, which a generalist or a specialist PSF would be able to attain, given the level of fees applied by their partners. The choice to focus only on partners' fees was made because these are the prime reference persons, which clients enter into contact with (Maister, 1993). The overall number of clients actually won is represented in the model as a stock, defined as follows:

$$C_t = \int_{t_0}^{t} \left(\Delta Clients\ won_t \right) dt + C_{t_0} \qquad \text{[A.1]}$$

where C_t is the number of clients at time *t*, while Δ *Clients won* represents the change in the number of clients won from time *t-1* to time *t* and it is defined as follows:

$$\Delta Clients\ won_t = \frac{EoBRoCW_t - C_{t-1}}{TTCW} \qquad \text{[A.2]}$$

where *EoBRoCW* stands for *Effect of Billing Rates on Clients Won*, i.e. the demand curve presented in Figure A.1, *C* is the number of clients and *TTCW* is the time it takes to acquire new clients. For sake of simplicity, for the simulation results here presented, the value of this last variable was set to 1.

By adding the client marketplace into the model, the overall system experiences an important modification. By focusing solely on the internal processes featuring the functioning of PSFs, the original model suffered of an important bias, i.e. the assumption that the firms could find and take up all of the projects, they could handle (see equations [6] and [7]), and in case they needed further resources to handle the exponentially rising number of projects, they could hire any number of associates, which they would need. By adding the client marketplace sector, the hiring needs are no longer generated solely by internal needs, but by environmental factors, too. Essentially this means that the hiring process is regulated by the gap between the actual resource availability of the firm, defined in terms of person-hours, and the resource needs given by the number of projects, which the firm actually deals with.

The resource needs are formalized as follows:

$$TRWH = C_t * AvTRpP \qquad [A.3]$$

where *TRWH* stands for *Total Required Working Hours* and *AvTRpP* is the Average Time Requirement per Project, which was set to 100 hours (see Table 3.2). The actual resource availability is instead given by the sum of the partners' and associates' overall billable times (equations [4] and [5]), i.e.:

$$OAWH = SSBT + JSBT \qquad [A.4]$$

The difference between the actual and the required resource availabilities, defined in terms of working hours, defines the firm's workload surplus, and it is formalized as follows:

$$WS = TRWH - OAWK \qquad [A.5]$$

By dividing the total amount of surplus required hours by the amount of time an associate is on average asked to spend on case resolution, i.e. the associates' billable time, it is possible to compute the number of associate, which the firm would need to close this gap. This is defined in the following equation:

$$JS\ needed = \frac{WS}{JSBT} \qquad [A.6]$$

If equation [A.5] defines the actual workload surplus, which a firm might experience, thanks to which it is possible to compute the actual number of associates needed to front the requirements of the projects undertaken, by relating the required and the actual workforce availabilities, it is possible to assess the firm's ability to fulfill its human resources need. This measure is defined through a ratio computed as follows:

$$workforce\ needs\ ratio = \frac{OAWH}{TRWH} \qquad [A.7]$$

The equilibrium point of this ratio is obviously 1. When this ratio assumes values greater than 1, the firm has more employees than it would actually need. On the contrary, when this ratio is lower than 1, the firm would need to recruit new associates, since it is in need of new human resources. This ratio, therefore, is the key regulator of the hiring process, which is defined as follows:

$$H_t = IF(workforce\ needs\ ratio < 1,\ JS\ needed;\ 0) \qquad [A.8]$$

A.4 Simulating the Model

This section revises all of the results presented in the preceding chapters in the light of the modifications to the formal model presented above. For both set of simulations, the initial value of the clients' stock was set to 25.

The Generalist PSF

Figure A.2 shows the baseline simulation results concerning the behavior of a generalist PSF.

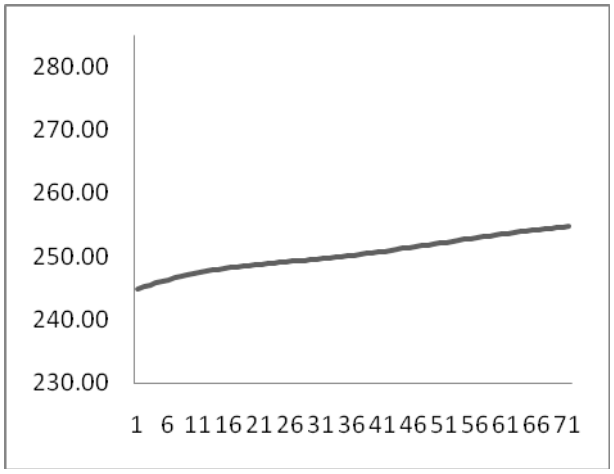


Figure A.2 a: Partners' billing rates

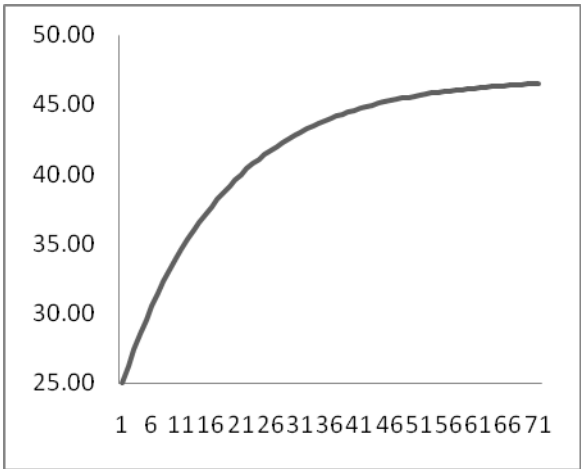


Figure A.2b: Number of clients

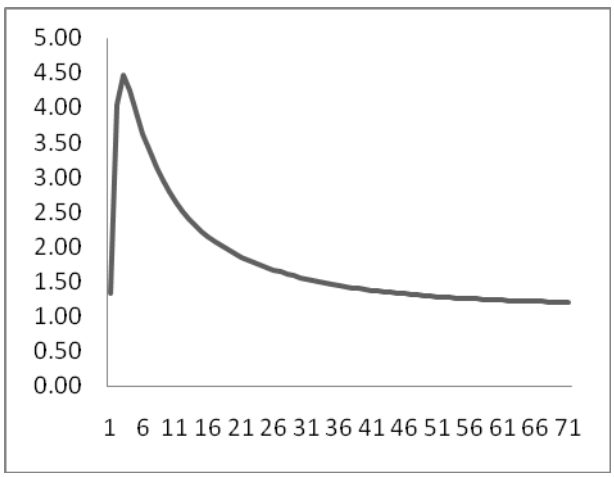


Figure A.2c: Leverage ratio

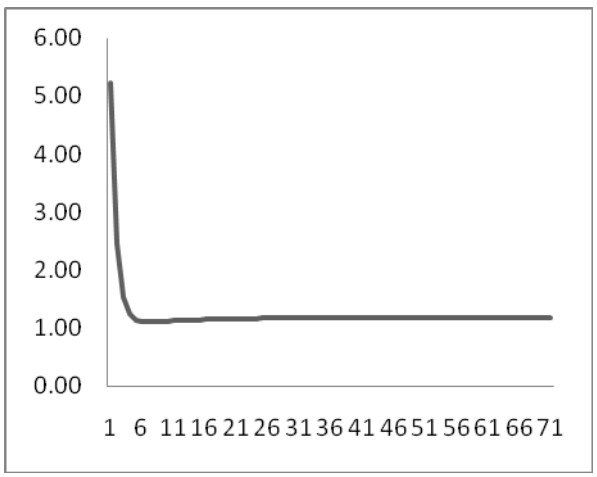


Figure A.2d: Hiring

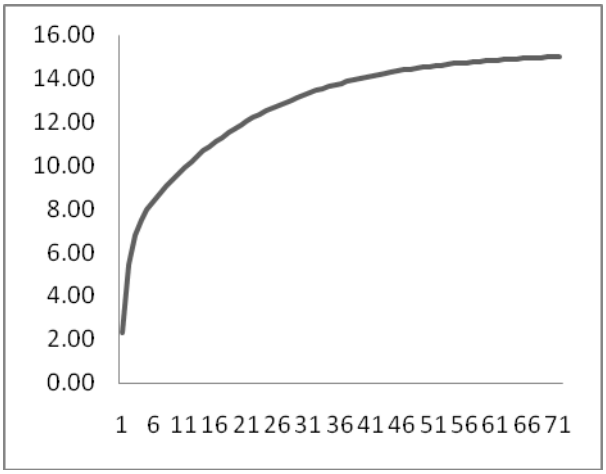


Figure A.2e: Total headcount

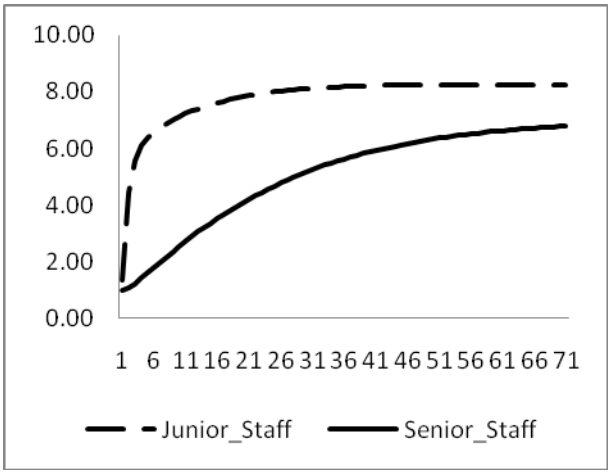


Figure A.2f: Demographic structure

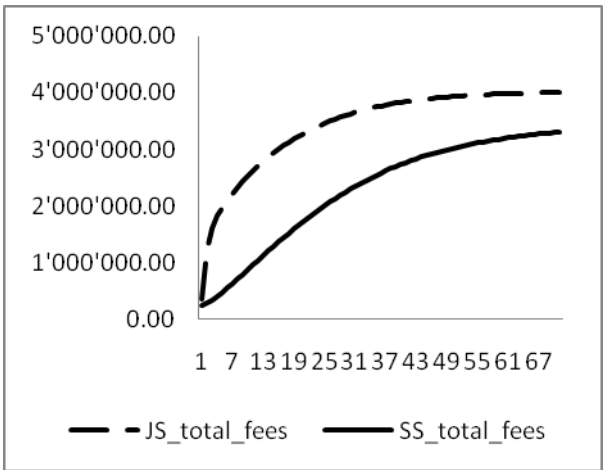


Figure A.2g: Sources of Revenues

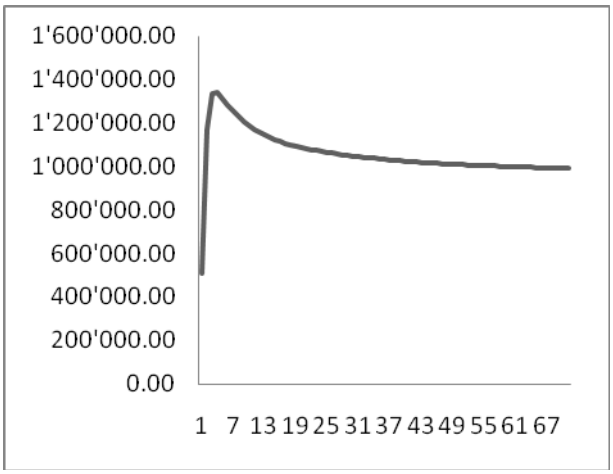


Figure A.2h: Profit per partner

As one can see in Figure A.2a, the trend of the partners' billing rates curve is the same of the baseline simulation result presented in Chapter 4 (Figure 4.8a). As showed in Figure A.1, this variable defines the number of clients, which the firm can acquire, which asymptotically rises from the initial value of 25 up to 45 (Figure A.2b). This means that the firm is able to acquire almost the all entirety of possible customers. The leverage ratio is no longer stable over the global simulation period, but it first rises exponentially and then asymptotically declines and stabilizes around 1.20 when the firm reaches the equilibrium between its required and actual workforce availabilities (Figure A.2c). The hiring curve in this case does not grow exponentially, as in the baseline results presented in Chapter 4 (Figure 4.3a), but it declines and almost suddenly stabilizes at around 1 associate hired per year

(Figure A.2d). This occurs because the firm does not experience an exponential increase in the number of projects acquired, but once it reaches its maximum capacity, it does not need to employ increasing numbers of new associates. As a consequence, the total number of employees does not grow exponentially, either (Figure A.2e), but stabilizes in response to the stabilization of the number of acquired clients, as well. As shown in Figure A.2f, however, the number of associates sharply exceeds the number of partners, showing therefore that this firms features the typical internal demographic configuration of the generalist PSF (Maister, 1993). The main source of revenue is even in this case represented by the fees applied by associates (Figure A.2g). Finally, one can assess that the profit per partner curve no longer grows exponentially, but after having reached a peak, it suddenly declines and stabilizes (Figure 4.2h), in accordance to the trend followed by the clients' curve.

The Specialist PSF

Figure A.3 shows the baseline simulation results concerning the behavior of a specialist PSF.

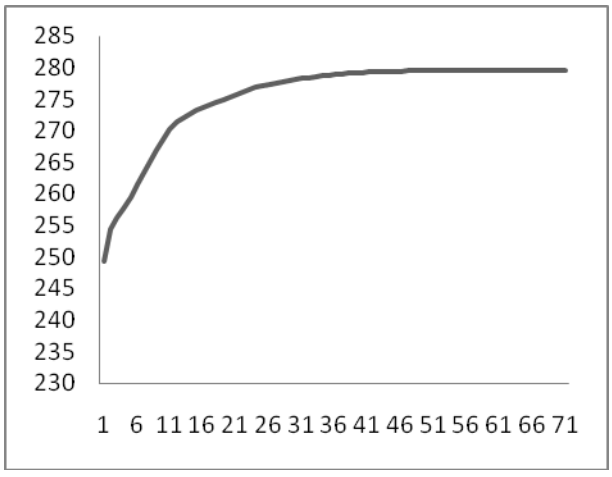


Figure A.3a: Partners' billing rate

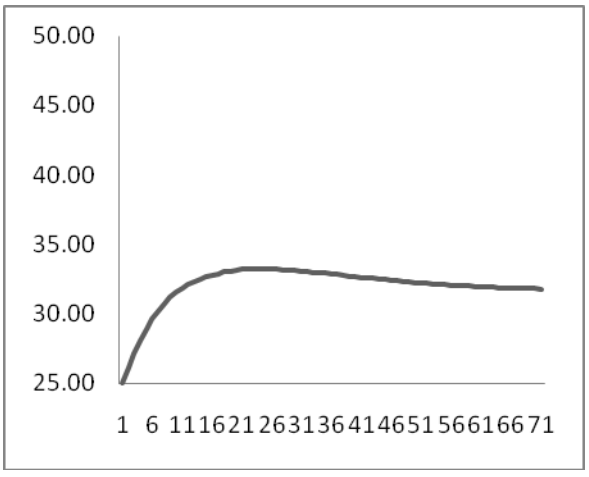


Figure A.3b: Number of clients

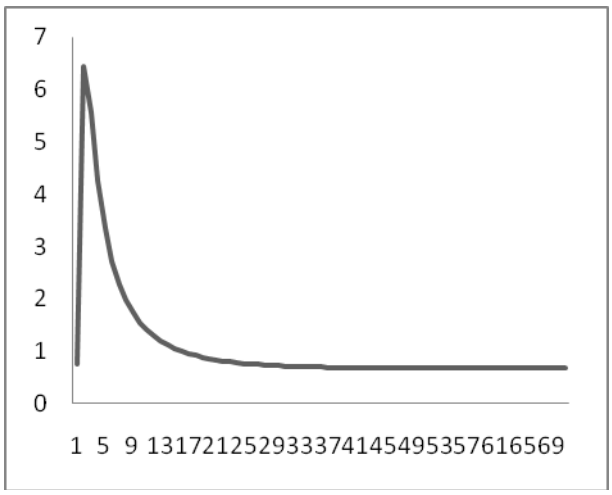


Figure A.3c: Leverage ratio

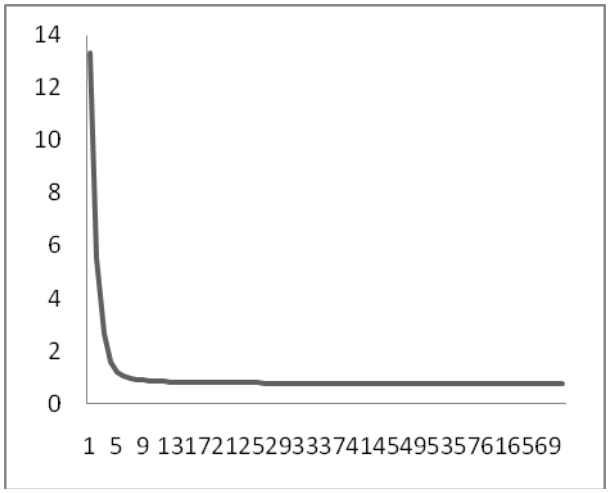


Figure A.3d: Hiring

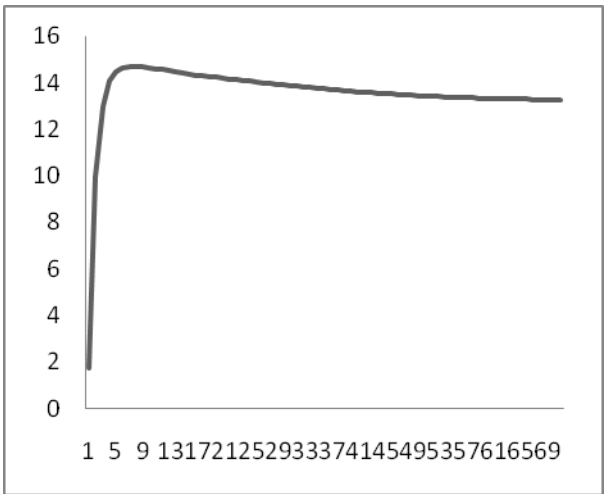


Figure A.3e: Total headcount

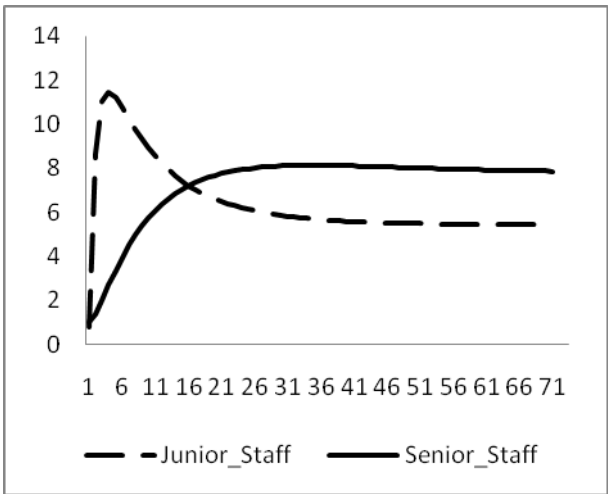


Figure A.3f: Demographic structure

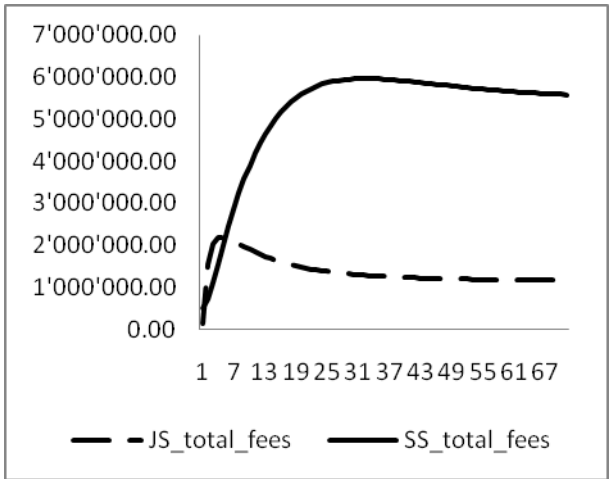


Figure A.3g: Sources of Revenues

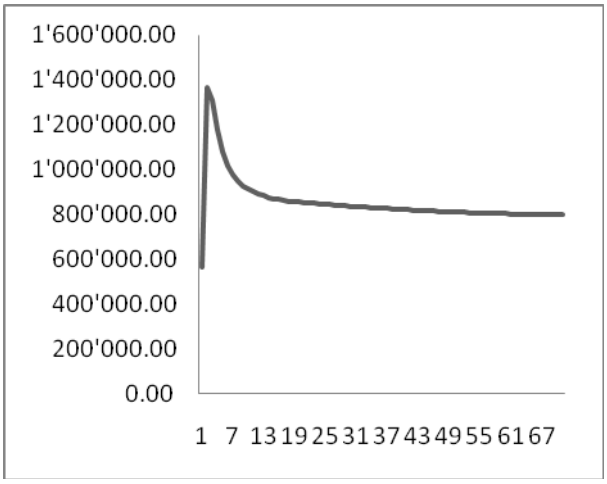


Figure A.3h: Profit per partner

Even in this case, the partners' billing rates curve does follow the same trend, which was observed in the baseline results presented in Chapter 4, as shown in Figure A.3a. Given the higher level of fees, the number of clients, which the firm is able to attract, is however lower than in the case of a generalist (Figure A.3b). Similarly to the generalist case, the leverage ratio suddenly rises, reaches a peak and then stabilizes, although at a lower level than before (Figure A.3c). The number of new recruits is in this case extremely low, because of the low workload, which the firm faces (Figure A.3d). The total headcount curve even in this case experiences a limit to growth (Figure A.3e), although in this case the internal demographic pyramid features a heavier top, since the number of partners exceeds the number of associates (Figure A.3f), which is consistent with what the literature advances (Maister, 1993). Even in this case, one can assess that the main source of revenues is represented by the fees applied by partners (Figure A.3g), as is typically the case in specialist PSFs (Maister, 1993). Finally, even in this case one can observe that the profit per partner curve stabilizes after having reached a peak, in accordance to the trend followed by the client stock (Figure A.3h).

A.5 Discussion and Conclusion

In the light of the inclusion of the clients marketplace sector in the model, the results produced display some notable differences with respect to those presented in Chapter 4, although the main characteristics of the two typologies of organizations appear to remain uniform across the two sets of simulations. It is, in fact, possible to assess that in both cases the evolution of the partners' billing rates curve is similar. This results from the fact that the dynamics featuring the knowledge per partners curve, which is at the root of the likelihood for these firms to increase their fees over market standards, is quite similar to the original baseline model (Figure A.4 a and b).

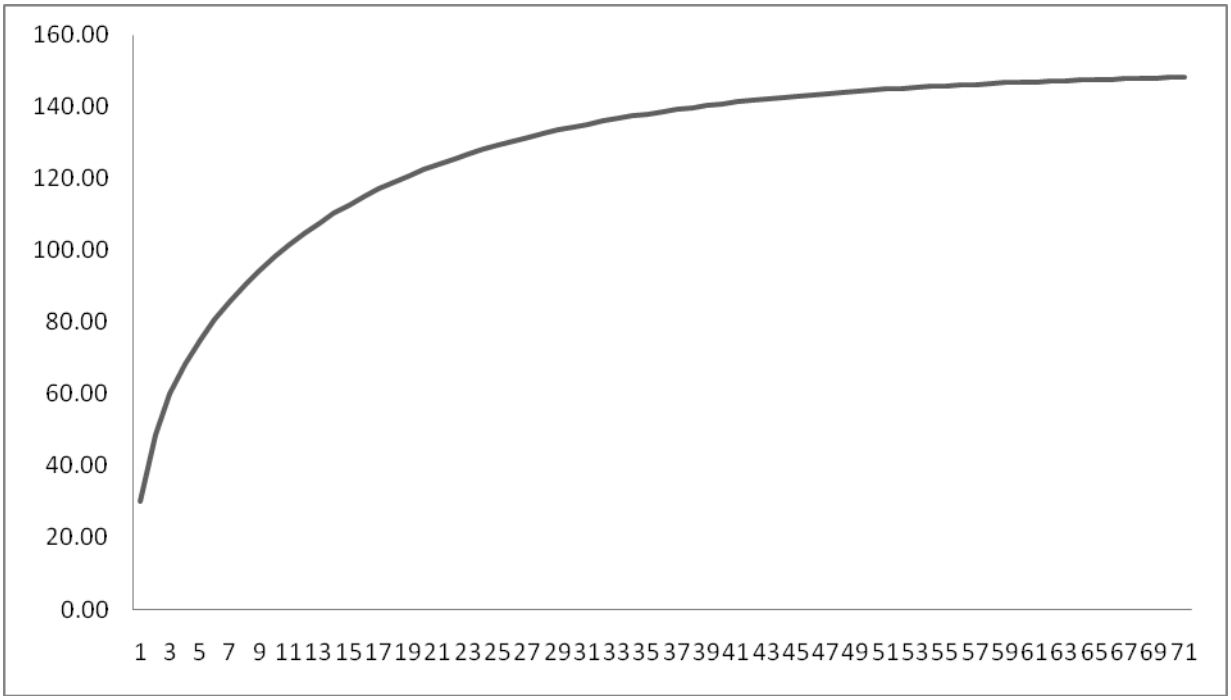


Figure A.4a: Knowledge per partner (generalist)

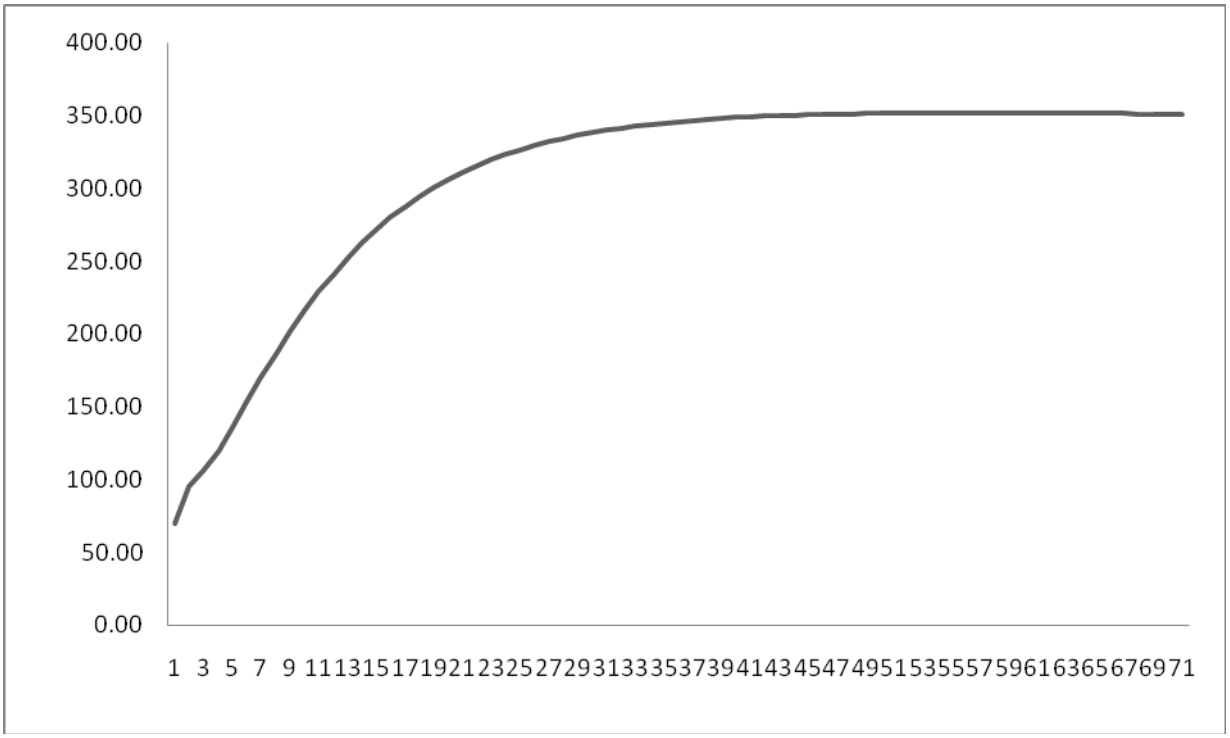


Figure A.5b: Knowledge per partner (specialist)

This occurs because these variables are almost exclusively determined by internal factors and arrangements, namely the time, which a partner is asked to devote to case resolution. As a consequence, any environmental variable does not directly impact on the way in which the knowledge per partner and the partners' billing rates curve unfold over time. Nonetheless, such variables do have a crucial impact on the number of clients, which the two typologies of firms can attract. As shown in Figures A.2b and A.3b, the generalist PSF is able to attract a larger number of clients than the specialist, which appears to be in accordance to what the literature asserts. For instance, Maister (1993) asserts that the efficiency-based practice, which closely mirrors the characteristics of the generalist PSF, "tend to be focused around a core of high volume clients" (p. 26), while for the specialist PSF, "the client mix […] would tend to be diverse, and constantly shifting" (Maister, 1993: 24).

The most striking differences concern, instead, the behavior of the demographics of the firm. Although the proportion between the senior and the junior staff remain even across the two sets of simulations, i.e. a wider number of partners than associates in the specialist firm and vice versa in the generalist case (cfr. Figure A.2f and A.3f), the total number of employees of these firms does not grow exponentially anymore, but experiences a limit to growth. This difference arises from the fact that, by including the client marketplace sector, the model does not assume that a firm would engage in any number of projects, which it could possibly take up, given its resource availabilities, leading therefore both the number of employees and the number of clients to rise exponentially. Rather, the internal resource endowment of the firms is determined by the choice, which clients make on the basis of the fees, which they decide to apply. Given the stabilization of the clients' curve, the employees' curve stabilizes, too. Galanter and Palay (1991) themselves do assert that "the assumption of unhindered growth is clearly unrealistic […]. We accept that real constraints to growth exist […]. In fact, the distinction between a firm's need to grow and its ability to do so is at the root of our broader argument" (p. 116).

Despite the more realistic behavior of the results produced by the model after the inclusion of the client marketplace sector, some limits still exist. First, the model still assumes that the two firms have access to an indefinite number of people to employ, while the likelihood to find associates to hire might act as another important limit to the growth of such firms (Galanter and Palay, 1991). Nevertheless, the most important limit is given by the absence of any competitive dynamic in the industry. Even in this case, in fact, the simulations concerning the specialist and the generalist PSFs were run separately, thus preventing us from grasping any insight about the behavior of these firms under competitive pressure. By allowing the simulation to take competition into consideration, it would be possible to effectively merge the micro- and the macro-organizational lines of enquiry. Moreover, it would be possible to revise another important issue, which was addressed in this research, i.e. the consequences of a change in the strategic orientation of the generalist and the specialist PSF. By taking competition into account, one would or could assess the consequences of such changes in a more realistic environment and, on the one hand, possibly analyze not only the *content*, but also the *process* of change and, consequently, gaining a more accurate overview of the costs associated with such a process, while, on the other, making such change to be triggered not merely by deterministic factors, but by competitive dynamics, too.

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Annex 1: Model Equation List

init Junior_Staff = JS_needed

flow Junior_Staff = -dt*attrition

+dt*hirings

-dt*promotion

init Knowledge = SS_overall_time_spent_on_project

flow Knowledge = -dt*knowledge_loss

+dt*knowledge_increase

init Senior_Staff = 1

flow Senior_Staff = -dt*retirement

+dt*promotion

aux attrition = JS_redundant

aux hirings = workforce_needs

aux knowledge_increase = SS_overall_time_spent_on_project*maximum_knowledge_increase

doc knowledge_increase = the effective increase of my knowledge stock is weighted for the time I spend on case

aux knowledge_loss = Knowledge*knowledge_loss_rate

aux promotion = JS_promoted

aux retirement = Senior_Staff/SS_average_tenure

aux Contributions = Total_fees-JS_total_salary

aux Effect_of_knowledge_on_SS_billing_rate = GRAPHCURVE(knowledge_per_partner,0,0.2,[0,0,0.03,0.04,0.05,0.06,0.07,0.09,0.11,0.13,0.15,0.17,0.19,0.21,0.23,0.25,0.2616,0.28,0.3,0.3,0.3"Min:0;Max:1"])

aux Expenses = JS_total_salary+Total_overhead

aux Hirings_for_replacement = JS_promoted+JS_redundant

aux JS_average_time_requirement_on_project = 1-SS_average_time_requirement_on_project

aux JS_effective_billable_hours = (overall_working_hours*JS_utilization_rate)

aux JS_individual_billable_hours = average_number_of_hours_per_project*JS_utilization_rate

aux JS_individual_fees = JS_billing_rate*JS_individual_billable_hours

aux JS_individual_salary = JS_fixed_salary+(JS_individual_fees/4)

aux JS_needed = JS_time_requirement_based_on_time_project/JS_utilization_rate

aux JS_promoted = JS_to_be_promoted_every_year*JS_promotion_fraction

aux JS_redundant = JS_to_be_promoted_every_year*(1-JS_promotion_fraction)

aux JS_time_requirement_based_on_time_project = Maximum_number_of_projects*JS_average_time_requirement_on_project

aux JS_to_be_promoted_every_year = Junior_Staff/JS_average_tenure

aux JS_to_SS = Junior_Staff/Senior_Staff

aux JS_total_fees = JS_effective_billable_hours*JS_billing_rate

aux JS_total_salary = Junior_Staff*JS_individual_salary

aux JS_utilization_rate = .9

aux knowledge_per_partner = Knowledge/Senior_Staff

aux Maximum_number_of_projects = SS_overall_billable_time/SS_average_time_requirement_on_project

aux overall_working_hours = Maximum_number_of_projects*average_number_of_hours_per_project

aux Profit = Contributions-Total_overhead

aux Profit_per_partner = Profit/Senior_Staff

aux SS_average_time_requirement_on_project = .2

aux SS_effective_billable_hours = overall_working_hours*SS_utilization_rate

aux SS_effective_billing_rate = SS_billing_rate+(SS_billing_rate*Effect_of_knowledge_on_SS_billing_rate)

aux SS_overall_billable_time = Senior_Staff*SS_utilization_rate

aux SS_overall_time_spent_on_project = Senior_Staff*SS_average_time_requirement_on_project

aux SS_total_fees = SS_effective_billable_hours*SS_effective_billing_rate

aux SS_utilization_rate = .4

aux Total_fees = JS_total_fees+SS_total_fees

aux Total_headcount = Junior_Staff+Senior_Staff

aux Total_overhead = Total_headcount*overhad_costs_per_professional

aux workforce_needs = JS_needed-Junior_Staff+Hirings_for_replacement

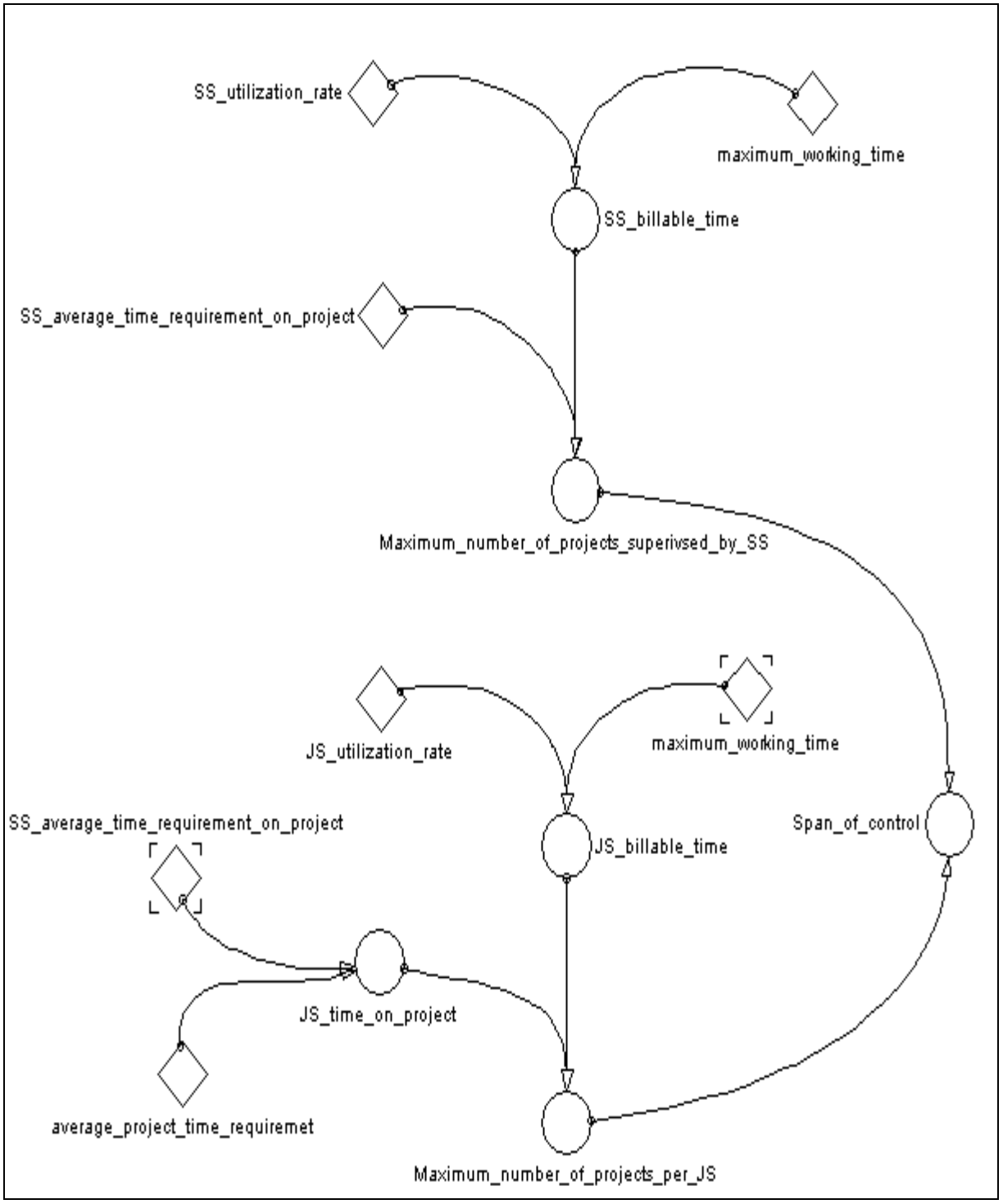
const average_number_of_hours_per_project = 2000

const JS_average_tenure = 7

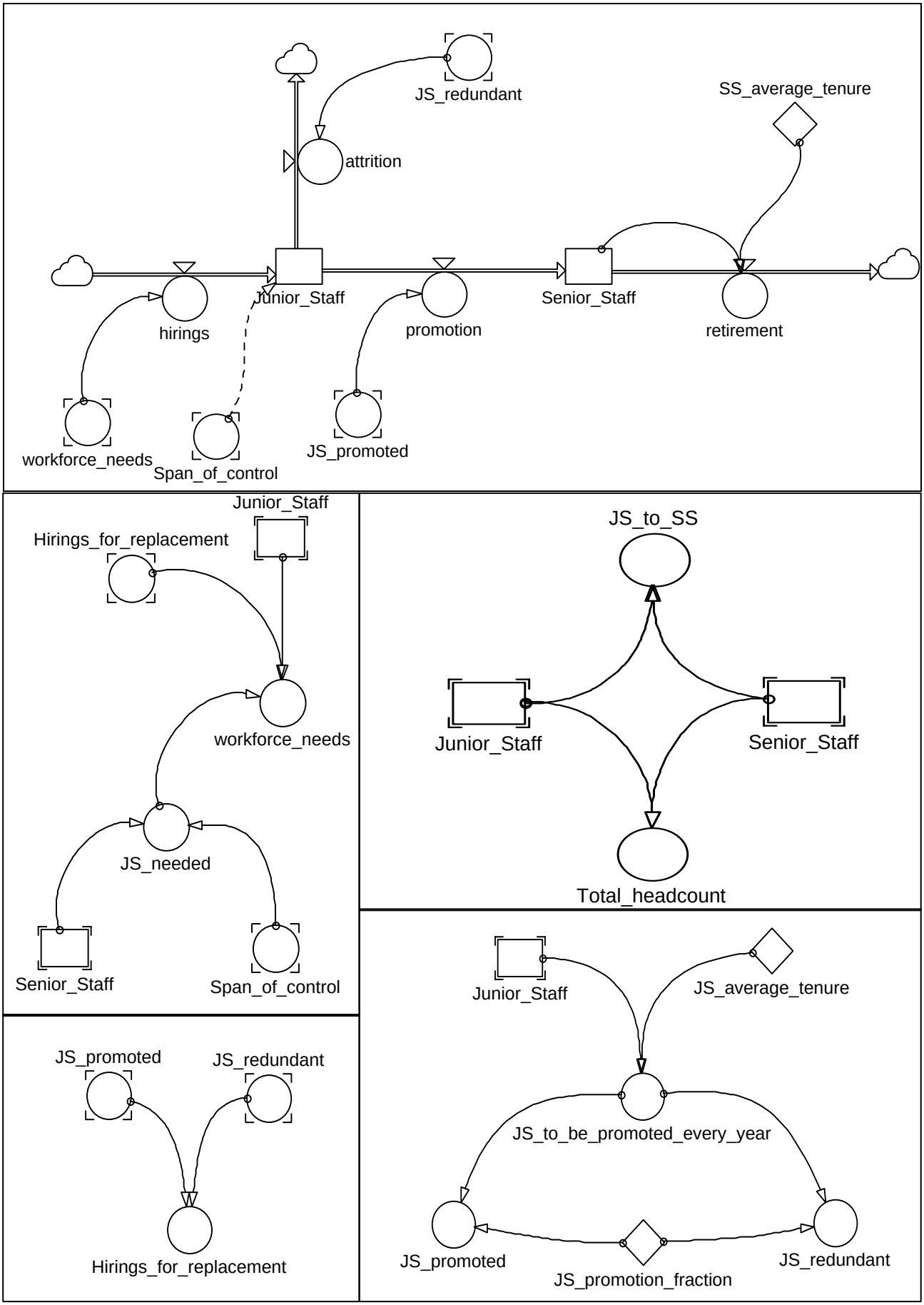
```
const    JS_billing_rate = 130

const    JS_fixed_salary = 10000

const    JS_promotion_fraction = .5

const    knowledge_loss_rate = .2

const    maximum_knowledge_increase = 1

doc      maximum_knowledge_increase = If I worked 100% on case resolution, I would get 1
'knowledge unit' increase of my knowledge stock

const    overhad_costs_per_professional = 30000

const    SS_average_tenure = 30

const    SS_billing_rate = 250
```

Annex 2: Model Diagrams

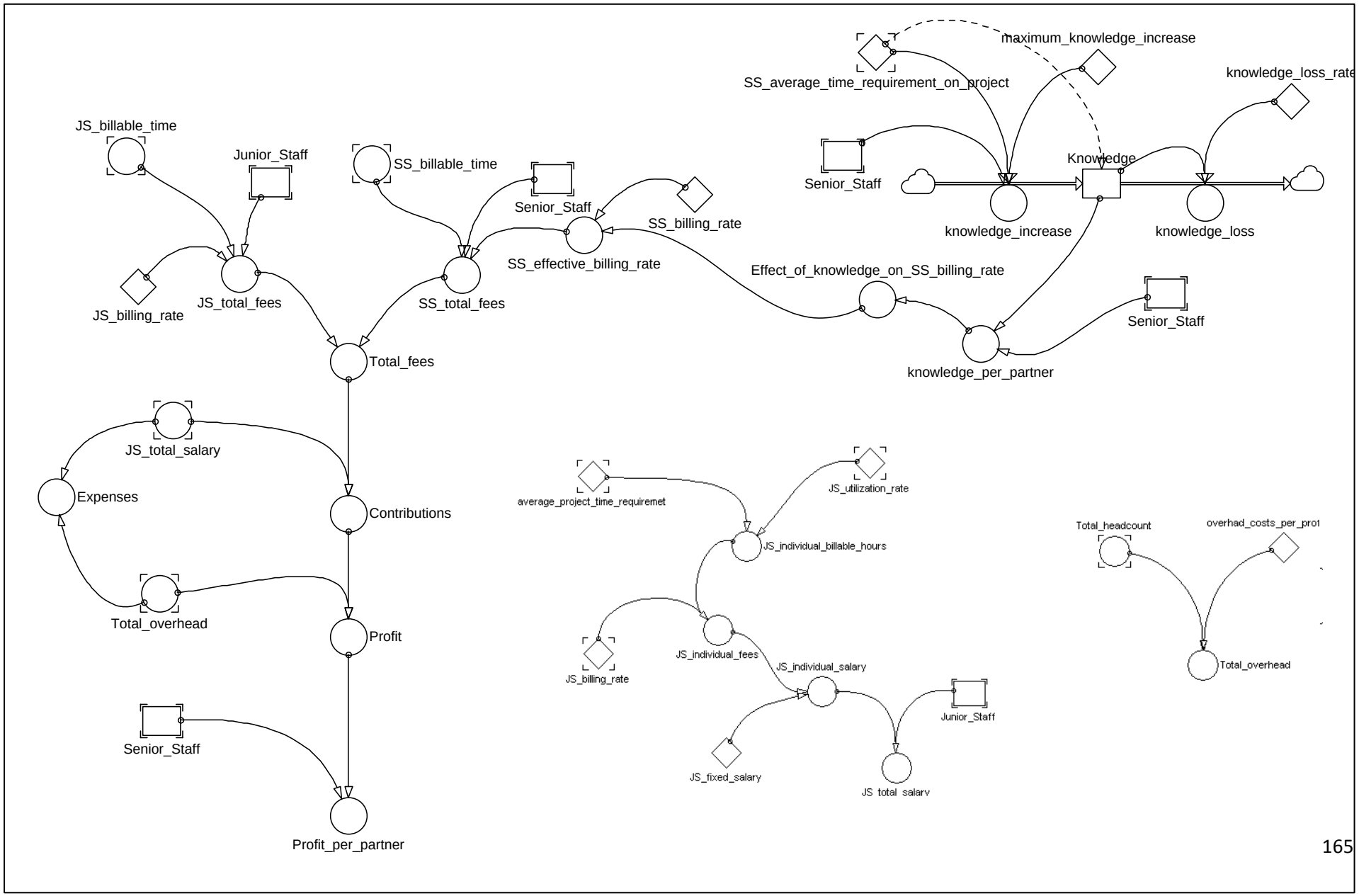
Business Orientation Sector



HR Sector

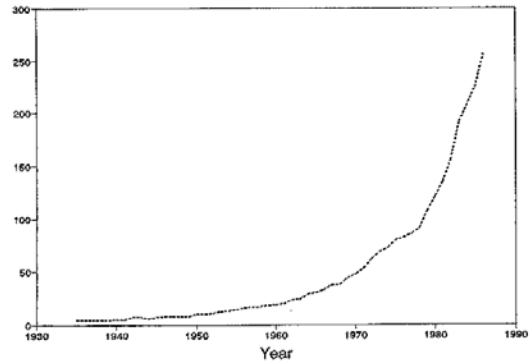

JS_redundant
SS_average_tenure
attrition
Junior_Staff
Senior_Staff
hirings
promotion
retirement
workforce_needs
Span_of_control
JS_promoted
Junior_Staff
Hirings_for_replacement
workforce_needs
JS_needed
Senior_Staff
Span_of_control
JS_to_SS
Junior_Staff
Senior_Staff
Total_headcount
JS_promoted
JS_redundant
Hirings_for_replacement
Junior_Staff
JS_average_tenure
JS_to_be_promoted_every_year
JS_promoted
JS_promotion_fraction
JS_redundant

Knowledge and Economics Sectors

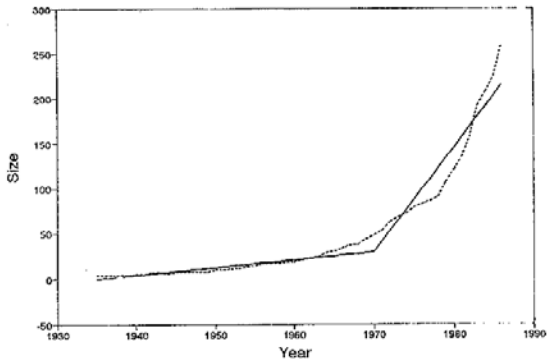


Annex 3 - Examples of growth patterns of NY big Law Firms, 1920-1990

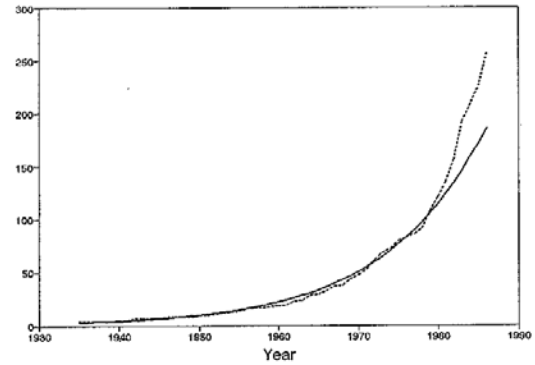
(Source: Galanter and Palay, 1991)



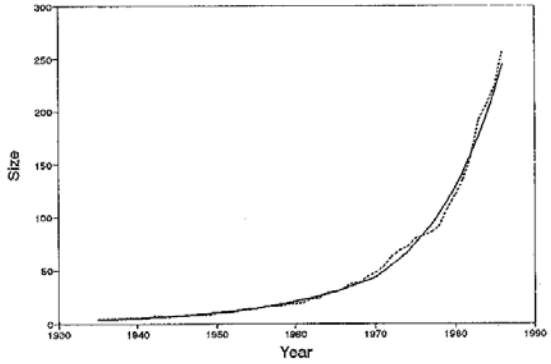
raph A: Actual Size



Graph B: Actual Size v. KLF Est.

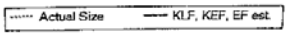


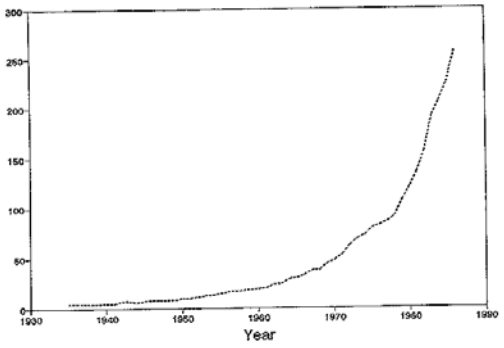
raph C: Actual Size v. EF Est.



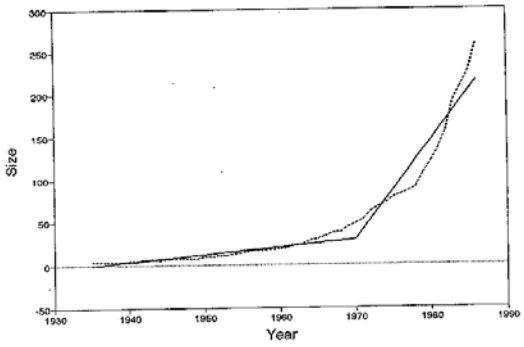
Graph D: Actual Size v. KEF Est.

igure 1: Latham & Watkins

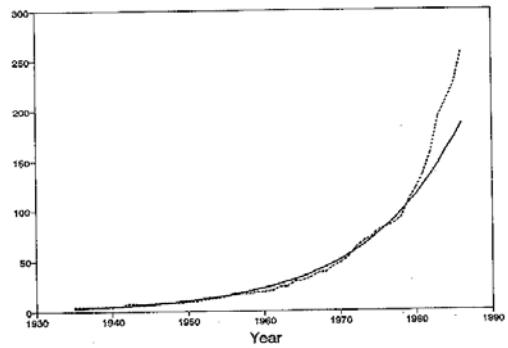




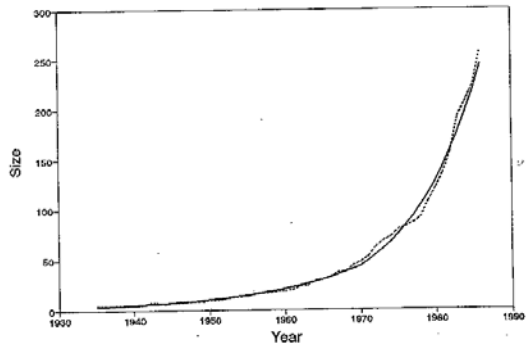
raph A: Actual Size



Graph B: Actual Size v. KLF Est.

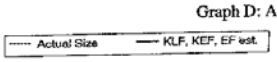


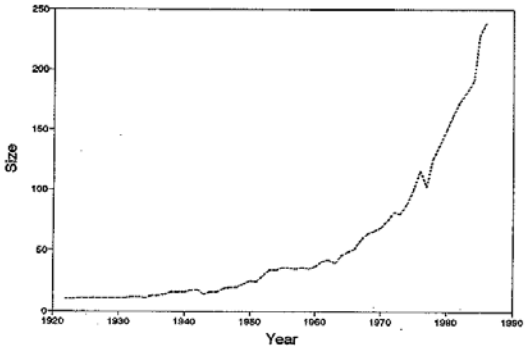
Graph C: Actual size v. EF Est.



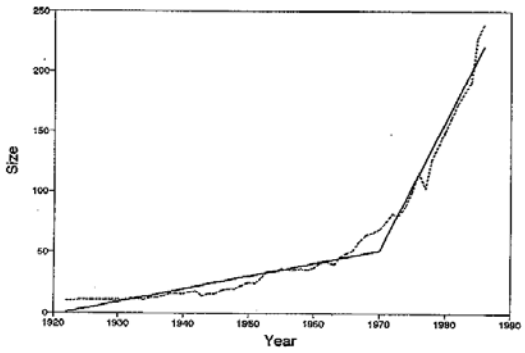
Graph D: Actual Size v. KEF Est.

igure 1: Latham & Watkins

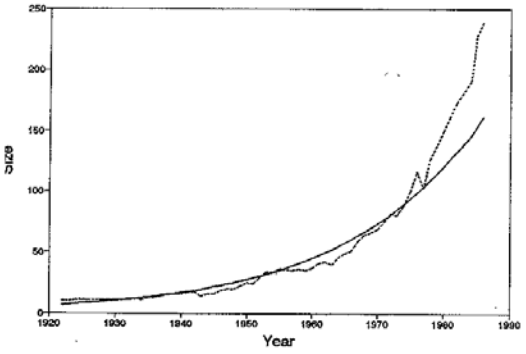




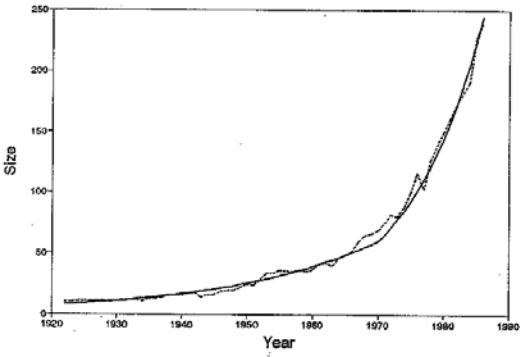
Graph A: Actual Size



Graph B: Actual Size v. KLF Est.

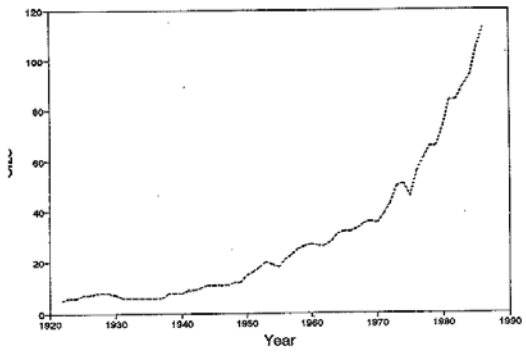


Graph C: Actual Size v. EF Est.

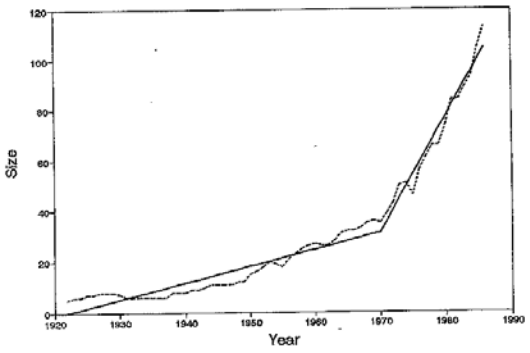


Graph D: Actual Size v. KEF Est.

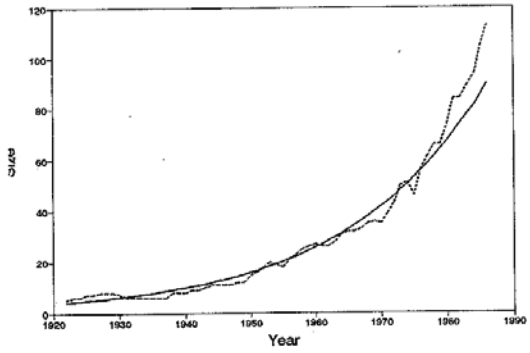
Figure 3: Foley & Lardner



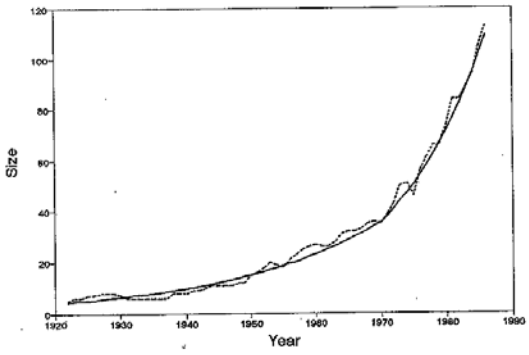
Graph A: Actual Size



Graph B: Actual Size v. KLF Est.



Graph C: Actual Size v. EF Est.



Graph D: Actual Size v. KEF Est.

Figure 7: Ice, Miller, Donadio & Ryan